Brother! Shed a Tear for the Kraft Industry

BROTHER! of your pity, shed a tear for the kraft paper industry. The poor, old impotent division has slipped into another congenital decline this last month.

This came right on the verge of the biggest fall buying opportunity which lay wide open before a languishing bunch of mill managers who need the tonnage and need the price worse than a kitten does its milk.

Stocks of paper in merchants' warehouses have never been so low as at the present writing. Neither merchants nor converters have dared to buy any paper for stock. One could drive a ten-ton Mack truck through any one of their warehouses and not strike a roll or bundle of kraft paper.

The whole merchant, converter and consuming trade has been listening patiently and attentively to the calls that have gone out over the land for "stabilization" meetings which did not materialize. All buying was withheld pending a meeting of the kraft paper manufacturers on September 12th when it was given out that the price was to be "stabilized." But it wasn't.

The adjourned meeting went to New York City on the 18th for further "stabilization." Well, right while the manufacturers were all "stabilized" in their conference chairs, somebody slipped an unstabilizer out on the Missouri River in the form of a $3.25 per cwt. quotation on kraft paper "good only for to-day."

Bang! away went the chance for any fall business. It all turned out to be just another dolly stuffed with straw.

As though this wasn't sufficient to put the finishing touches on any opportunity for fall paper business, with not a ghost of a chance for even a stray ton of counter rolls or sheets to be purchased, the light brigade from New York took a pot shot at the Boston market for $3.15 per cwt., or "thereabouts." And, oh boy! what a noise that made. Of course, the pots are all now busily engaged in calling the kettles black, and the conventional buck passing from one price cutter to another is the order of the day.

In the meantime, every merchant, converter and consumer in the country knows that this is no time to buy paper and the young gossips of the trade are mouthing this deplorable situation from Botany Bay to Frisco.

Price-cutting has become epidemic in the kraft paper division and believe us, brother, they are making a merry game of it. There seems to be only the keenest rivalry between the various mills in the industry to see who can sell the most paper at the lowest below-cost figure. That competition is the only competition extant in the kraft paper and bag industry at the present writing.

Overproduction, and its accompanying evil, unwarranted price-cuttings, and the lack of confidence that such tactics engender, are sapping the life blood of this essential industry.

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The situation is loaded with dynamite. There seems to be no bottom to the market and no chance nor hope for stabilization. As we have pointed out in this column heretofore, rationalization of the industry must precede stabilization, for the best remedial plan that the industry may adopt for its salvation may be violated and become of no effect while the present personnel in the management of the various large units of the industry retain their power.

Therefore, we say again—Brother! drop a couple of tears for the imbecile, old kraft paper industry, and its unruly offspring, the kraft bag division.

The Institute of Paper Chemistry

THE dedication of the Institute of Paper Chemistry at Lawrence College in Appleton, Wis., marked an epoch in the history of papermaking in this country. Its significance will be best appreciated by the survivors of that group of enthusiastic paper mill executives, chemists and engineers who were instrumental in organizing the Technical Section of the American Paper and Pulp Association. This was the name which the Technical Association bore when organized at Chicago in 1915. Then as now, Ernst Mahler, of the Kimberly-Clark Corporation; Henry E. Fletcher, of the Fletcher Paper Company, and William G. MacNaughton, then of the Nekoosa-Edwards Paper Company, were active in the furtherance of its aims and objects. The International Paper Company and the Hammermill Paper Company were also represented by members of their technical staffs. Much water has passed under the bridges since then and the Technical Association of the Pulp and Paper Industry has grown in influence and numbers. There has been a rapid and continuous development of interest in the scientific study of pulp and paper manufacture which has led to many improvements in manufacturing processes, the record of which has been spread upon the pages of the periodical publications of the paper industry, as well as in the published proceedings of the association.

In the early days of the association a good deal of prejudice on the part of practical papermakers against the chemical control of operations had to be overcome, the idea of research work to determine the best methods of pulp production and subsequent control of conversion processes being received at first with little favor. But, as the executives of mills began to appreciate the importance of research into the nature of wood and the other raw materials of papermaking after being presented with concrete evidence of economies in manufacture and greater superiority of product, the old prejudice gave way and a heartier measure of support was accorded. It was not long before the larger and more responsible firms engaged in pulp and paper production began to recognize the importance of men possessing technical and scientific training in the chemistry and engineering processes which are now applied quite generally in the paper industry.

The foundation of an Institute of Paper Chemistry as a school of graduate instruction for chemists and engineers is a logical outcome of the attention which has been paid in this country during the past sixteen years to the development of research looking to a solution of fundamental problems involved in the utilization of fibrous raw materials in the scientific production of paper, problems which are numerous and varied.

The Institute of Paper Chemistry at Appleton has been established on a firm basis. It is national in character and its objective is the training of men for applied research in papermaking problems after these men have demonstrated their capacity to undertake such work by graduation from schools and universities which have imparted to them the foundational knowledge of science and technology which is so requisite for men who intend to pursue further studies in the fundamentals of papermaking.

Safety Accomplishments

IN a recent editorial article the **New York Times** was moved to remark, apropos of industrial fatalities, that accident prevention engineers have not been able to accomplish anything toward reducing the number of deaths in industry. This very pessimistic observation was prompted by a report of the New York State Commissioner dealing with accident statistics for the month of June in which the fatalities in industry were reported. While fatal accidents in New York City during the month of June did not exceed the number reported for the month of May, and up-State districts showed a decrease, an increase of five

Comparative Daily Cost of Switching C. B. & Q. Industry Tracks at Crete, Neb.

	Steam Switcher, Class G-3		Gas Electric 7168
Engineman	$7.16		$7.16
Fireman	5.63		...
Coal, 5.6 tons at $4.26 (Including $11.82 freight)	23.86	Gasoline	4.42
Wood	.44		...
Water, 2 tanks	2.00		...
Oil and waste	.33		.40
Other supplies	.53		.53
Enginehouse service	7.34		4.07
Running repairs	8.08		4.48
Total	$55.37		$21.06

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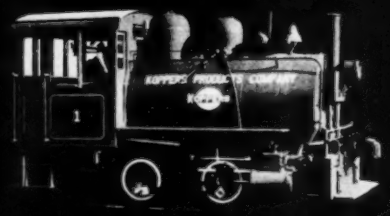

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E D I T O R I A L

deaths was pointed to in the Albany district, the total fatalities numbering 155 for the month. An encouraging schedule in the list was said to be the fatalities due to vehicles which remained at the level of the rest of the year, though May and June are months of heavier traffic.

It is noted by the editor of the **Times** that experts in accident prevention can tell with considerable accuracy what proportion of injuries caused by motors, falls, falling objects or sharp objects will prove fatal, though specific predictions concerning types of accidents that will result in death cannot be made. In reference to deaths from infection following fractures or lacerations, it is admitted that probably not all were preventable, but the injunction is given that workmen handling sharp objects or working with machinery in which their hands may be caught should receive instruction in the use of antiseptics, and the need of promptness in the treatment of slight abrasions, which is taught so consistently by paper mill safety engineers, is properly emphasized. The dictum of the editor that many accidents need never occur if workmen and authorities unite to prevent them is axiomatic. It is a counsel which those responsible for prevention of accidents in our industry scarcely need, seeing that it is the policy of the mills who compete for safety prizes in THE PAPER INDUSTRY annual safety contest always to guard against infection from minor injuries.

There is no question that industrial safety through organized effort under the direction of the National Safety Council has made progress over a number of years. W. H. Cameron, managing director of the National Safety Council, has been moved to make public some of the accomplishments of the organization since the beginning of the work. In a communication to the editor of the **New York Times** he calls attention to the following facts:

1—The death rate from all accidents except those involving automobiles declined 32 per cent from 1913 to 1930. It is practically certain that industrial deaths participated in this improvement.

2—In Pennsylvania, the average death rate per 1,000 workers was 0.50 during the period 1916-20, whereas in 1928 it was only 0.36.

3—Ten years ago there were more than 2,500 deaths of employees every year in railroad operations. In 1930 this number was only 974.

4—There has been a 15 per cent reduction in mining deaths in the last ten years.

5—Recent definite investigations indicate that there were only 19,000 industrial fatalities in 1930 and that 3,000 of these were killed in motor vehicle accidents in the course of their employment. This total of industrial deaths is 14,000 less than in motor vehicle accidents and 11,000 less than in home accidents.

In addition, the point is made by Mr. Cameron that accident rates have been reduced 28 per cent in the past two years by 1,600 industrial concerns reporting to the National Safety Council and, while he admits that the problem is by no means solved, it is apparent that conscientious effort is producing good results.

More on Alaskan Pulpwood

IN reference to the petition of the American Paper and Pulp Association to President Hoover to postpone the sale of national forest pulpwood in Alaska, commented upon editorially in recent issues of THE PAPER INDUSTRY, Jesse H. Neal, general manager of the association, has had further correspondence on the subject with the Department of Agriculture. The contention of the association is that no government pulpwood, wherever located, should be disposed of that would involve any new mill construction until additional production should be needed to meet public requirements.

In a recent communication to members, Mr. Neal returns to the subject and intimates that the Department of Agriculture betrays a disposition to adhere to its original position that any restriction of the Alaskan pulpwood development would not be justified by existing conditions. To date, therefore, the matter is still undecided.

One of the points made by Acting Forester Kneipp in a memoradum submitted for the information of the Secretary of Agriculture, was that the matter should be left to "the free play of economic laws," when a solution would be reached "with minimum injustice to the people of the Territory and to the Nation as a whole." In reply to this, General Manager Neal referred to the danger of placing too much dependence upon the free play of economic laws. He pointed out that free play production, uncontrolled, uncoordinated and undirected, was responsible for existing distress in agriculture, petroleum production, mining and many other industries. He added that this same "free play" may be charged in a large measure with the present tremendous excess capacity in newsprint. Alaskan timber is a great nationl reserve and to throw it on the market at this stage of affairs would result in profitless, ruinous competition with privately owned wood; whereas, when held as a reserve to be used economically at the proper time to augment private sources of supply and prevent shortages, it would be a benefit and not a source of disturbance to the industry.

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Steam Generator vs. Boiler Horsepower

By A. J. KULL

Chief Engineer, Blandin Paper Co., Grand Rapids, Minn.

PAST history in the industrial field in this country teaches us that there has been a steady growth in manufactured goods, not only in quantity but in the rate of production. After giving due credit to higher efficiencies in the production end and savings effected by automatic equipment, we still find a considerable increase in the demands for more power.

To keep pace with this increased load, the generating capacity has been increased in many cases by adding more boiler horsepower to a plant which is already obsolete.

In most cases when the question comes up how to increase the steam generating capacity, the management is brought face to face with an imperative demand for further capital outlay. A careful survey is made of the cost of a new boiler plant consisting of several boilers, to allow one boiler for standby and possibly raise the rating a little over the old plant.

In view of the fact that the cost of an entirely new plant runs into considerable money, and this amount has to be spent all at once, when capital is needed for expansion on the production end, it is frequently decided that by adding another boiler to the old ones already in service, the additional load can be carried until such a time as increased production begins to show a fair return on the investment. So far, the boiler horsepower has been increased, the additional load can be carried, and the initial investment has been held down to a minimum, but the over-all boiler efficiency has not been increased.

Analyzing Steam Requirements

Now then the fault does not lie so much with the management for holding down the investment cost, as with the engineering profession for not analyzing more carefully the steam requirements, and making the utmost use of the steam after being generated.

Supposing a plant survey shows that several engines are using live steam at the rate of from 25 lb. to 50 lb. per horsepower and that low pressure steam can be used for process work and that the electric load is gradually increasing. In many cases, this plant can show a considerable increase in savings by installing a bleeder type turbine and bleed steam for process which in turn eliminates oil in the condensate and vessels using process steam. Clean condensate in turn means a higher rating from the present boilers and fewer burned out tubes.

If it is reasonably certain the plant will go to a higher pressure at some future date, in view of the higher efficiency, a turbine may be purchased for the higher pressure, but for the present be equipped with low pressure blading. This blading can be replaced with high pressure blading at a small cost at some future date.

Let us also suppose that at sometime in the past an additional boiler had been added to take care of the increased load at that time and that this boiler is comparatively new. This would have some bearing in the consideration given the old plant against a new one.

In all ordinary instances a boiler is limited as to its capacity for generating steam by its furnace, and quite frequently it is found that if the furnace is in a poor condition, and the stoker is inefficient, a much higher rating can be carried if a new furnace is installed, in some cases with water cooled bridge wall, and others with water cooled bridge

wall and side walls, and others again with air cooled side walls.

At this point we are getting away from steadily increasing the boiler horsepower by additional boiler installations and going to the more efficient method of steam generators.

Reducing Steam Costs

So far we have concerned ourselves with increased steam productions with no increase in labor but without any appreciable great decrease in the cost of steam. In times such as these, a manufacturer frequently finds that power costs must be reduced drastically, quickly and at a price which is not prohibitive. In place of generating power costing around one cent with a low pressure plant, current must be generated at cost of six mills or even less, depending on the amount of process steam used.

Suppose instead of installing several boilers say of 800 b.hp. and run them at 175 per cent to 200 per cent of rating, we go to what we may call a steam generator of 800 b.hp. and operate this unit at 400 per cent of rating, 450 lb. pressure and 200 or 250 degrees superheat. It is being done in a few instances, and in case of a shut down, the old plant is started up and the high pressure turbine is operated on low pressure and lower efficiency for a short period. On first thought this may seem like too much of a risk, and if we compare it with past practice, I grant the new unit would be off the line nearly as much as it is generating steam. If a steam generator is designed for 400 per cent rating, it will carry this load with fewer outages than the old plant, providing one uses properly treated feed water.

Much has been written about properly treated feed water and this problem is pretty well solved by feed water experts.

Some plants use evaporators with a slight treatment afterwards, others use lime and soda treatments both hot and cold, others again use a combination of both depending on the amount of make up and the condition of the water. With properly treated water there is absolutely no reason why the boiler should be taken off the line more than once a year or even longer.

Furnace Maintenance

Since the writer happens to have had more experience with unit pulverizers than any other method of firing, this method will be emphasized, but it is generally understood each type has its points and place in the art of generating steam.

Let us then suppose that the boiler is to be fired with pulverized coal. The next problem is the furnace maintenance.

To operate at 400 per cent rating the furnaces must have properly designed water cooled walls to eliminate brick work trouble. We have had many years of experience now with water cooled walls, and burning out of tubes in the water walls is a rare occurence indeed. This happened in the early days of the development, due to restrictions in the returns from the water walls and the forming of steam pockets in the tubes exposed to the hot furnace. In order to get away from shut downs, due to cleaning out ash in pulverized coal fired units, a new type hopper shaped bottom furnace is being designed. The floors in these hopper bottoms are generally lined with water tubes and these are built at a greater angle than the angle of repose of the ash. Consequently, the ash can be removed by opening spouts located at the bottom of the hopper. If this is done at regular intervals, no slagging will appear.

If we bear in mind that from 55 per cent to 60 per cent of the heat generated is absorbed by the water walls, and from 5 per cent to 10 per cent by the economizer, and in some installations an air preheater as well, there is very little more work for the boiler itself to do than in the plant running at 200 per cent and lower.

Since the boiler tubes are clean on the inside at all times, there is a good heat transfer in the boiler, and with an economizer, the overall efficiency should be very high. In the ordinary plant with many boilers, there is a frequent shutting down of boilers with a cooling of the setting, a wasting of the hot water in the boilers, and the heating up the cold boiler again, subjecting the steel to stresses at each operation.

By installing one steam generator, the initial cost is lower. The new boiler room need only be large enough to take care of the new boiler with a temporary wall at one end that can be removed at some future date. In many plants, the new boiler may be installed in the old building by increasing the head room.

The operating efficiency will be considerably higher, since a little more money can be spent for refinements than could be done if several boilers were installed.

There will be fewer air leaks, fewer expensive valves, less piping, fewer soot blowers, shorter coal bunker and a lower drop in steam pressure due to shorter header.

If a careful study is made of the operating conditions, there is no reason why a boiler should not be as reliable as a steam turbine, an engine or any other important machine in a factory. All of these machines are expected to operate almost continuously without having a standby unit in reserve.

Artificial sponges of rubber composition have been in use for years, but the latest development in that line is a sponge composed of cellulose. It is called "Agfa-Viscose Sponge," and is the product of a German dyestuff works. It can be made in any size and, it is said, may be boiled with soap or soda without losing shape or stability.

Operating Standards in a Fine-Paper Mill

II—Some Fundamentals That Enter into Control of Manufacture

By H. M. GRASSELT

THE control of rag room activities would be incomplete if appropriate care and disposal of salvage materials were neglected. Muss, dust and bagging should be baled and stored in definite places instead of being scattered throughout the plant in small lots.

A report of quantities on hand should be sent to the purchasing department at regular intervals, in order that they may be disposed of at an opportune time. Fluctuations in market conditions should be watched very carefully in order to always obtain the most advantageous prices.

It may pay in many instances to grade salvage materials, especially bagging and rag dust, for better prices.

Bleach Boilers

An endless belt or conveyor system should carry the sorted and cut rags to the bleach boiler. In a well-arranged rag room there is very little intrafactory trucking.

There are certain standards applicable to the cooking of rags, viz.:

The rotary boilers must always be filled with a definite quantity of rags.

There have to be used standardized quantities of conversion supplies (lime, soda ash, caustic soda) for each grade of cotton rags.

The cooking time has to be standardized for the individual grades of rags.

There must be a standardized steam pressure for each grade of rags.

To eliminate extra handling, bleach boilers should be filled directly from the cutters whenever possible. Since for obvious reasons, this is not always feasible, storage bins for the cut materials should be set up in immediate proximity to the boilers.

It is imperative to adhere to the established standards at all times, since a uniform treatment in the preparation of rags has a decisive bearing on the quality of the half stuff.

A wrong treatment in the boiler—like too high a steam pressure, an excess of conversion supplies, etc., destroys the strength of the cotton fiber to a certain degree and renders the half stuff harsh and brittle. Subsequent processing, be it ever so skilled and efficient, will never regain for the fiber any of its good characteristics that have been lost.

Cotton or linen fibers should be the last things that are "hard boiled" in a paper mill.

Washers

The cooked rags are loaded in cars and on top of each car a ticket with the bleach number and the grade of rags should be placed for the washer men.

The washing of rags is a very important function. In the washer, the rags have to be cleaned, broken up into fiber (not chopped up) and bleached. The individual functions have to be governed and controlled by certain standards.

First of all, the quantities put into washers should be uniform at all times in order to permit of uniform treatment in the subsequent operations.

The quantity of bleach used for each grade of fiber must be standardized. Here a thorough investigation of the exact requirements for the respective grades is necessary for the attainment of best results.

Too small a quantity of bleach will leave color in the fiber, while too much bleach weakens the half stuff.

It is impossible, to state definite quantities and strength of the bleach in a paper like this, since mills have to adjust these details according to washer capacity and grades of rags used.

There must be a definite washing time for each grade of rags, divided as follows:

A fixed time to wash the rags;
A fixed time to bleach them, and
A fixed time to wash the bleach out.

Washer men have to adhere to these predetermined standards and enter the time in the Washer Report. This report shows the time the washer was filled, the length of treatment and the time it was dumped, the number of the drainer the stock was emptied in, bleach number (taken from the ticket in the car of cooked rags) and the respective quantities of conversion supplies used.

The strength of the bleach must be checked at frequent intervals; the liquid required for each washer should be taken from a tank with gauges that measure exacting the quantities required. This method is preferrable to taking the bleach from the tank in pails.

Washer equipment must be in perfect condition at all times. Regular inspections of pipe lines, rolls, beds, etc. insure this end in view. It has to be borne in mind, that besides being properly bleached, the half stuff (cotton or linen fiber) must retain a maximum of strength. In lowering the rolls, the fiber

should be drawn out and not chopped into small particles.

To find just the right quanity of bleach for each grade of rags to obtain as white a fiber as possible and yet not destroy of particle of its strength, is a problem that requires much study and checking up. Even the most intensive colored fiber can be bleached as white as freshly fallen snow if the mill does not care for strength and intend to use the fiber as a filler. Only recently, a high pressure salesman almost convinced the writer that a certain grade of practically unbleachable cotton cuttings could be gotten high-white, if properly treated. An examination of the sample divulged the fact that it apparently had been "soaked" in a very strong solution of bleaching powder for at least 24 hours. A slight rubbing between the palms of the hands turned the sample into powder. The sale, of course, did not materialize.

The preservation of strength in the fiber must be kept uppermost in mind. Hence, attempts at reducing the cost of washer operations cannot be made at the expense of quality of the half stuff.

Drainers

Drainers, as the name indicates, are used to drain the excess water off the half stuff. The process of bleaching, also, is completed in the drainer. Drainers must be numbered.

It is necessary to inspect drainers regularly in order to prevent impurities from getting into the fiber. Often pieces of brick break off defective walls and get into the half stuff. Defective bottoms permit of flowing off of an excess of valuabel fiber—invisible waste.

A drainer should be always entirely empty before new material is emptied into it; to dump new material in part of the previous bleach is bad policy, since it retards drainage. Furthermore, the residue of bleaching powder in the water weakens the already bleached material from the previous bleach.

It is advisable to fasten a small slate to the outer wall of each drainer, so that on it can be stated the number of washers put into the respective drainer, the grade of fiber and the time closed.

Definite seasoning periods have to be adopted for the various grades of old and new fibers. Old fibers require a shorter time for draining than half stuff of new cotton cuttings. Under no circumstances should half stuff be taken from the drainers before the expiration of the minimum seasoning period. Green half stuff has a very detrimental effect on the quality of the paper, as will be pointed out in a subsequent chapter.

Resumé

In closing the discussion of the Half Stuff Department (Rag Room, Bleach Boilers, Washers and Drainers), a concise review of the principal operations and functions that should be under constant control, are given in the following paragraphs; also a brief description of the method of treating half stuff in cost work.

In the Rag Room:

Storage of rags according to lots; adequate and dry storage facilities near the sorting room to avoid expensive intrafactory trucking.

Inspection of rags, testing and prompt reporting of all irregularities.

Proper handling of salvage materials (bagging, muss, etc.).

Control of output of each sorter; continuous inspection in order to maintain a high efficiency.

Piece work rates and the quality of the output.

Bleach Boilers:

Fixed cooking time for the individual grades of rags.

Uniform loading of boilers and definite quantities of conversion supplies to obtain an always uniform half stuff.

A definite steam pressure for each grade of rags.

At the Washers:

Uniform loading, definite washing and bleaching periods for each grade.

Proper treatment of the fiber in the washers; absolute cleanliness and standard quantities of conversion supplies according to the grade of fiber.

In the Drainers:

Fixed seasoning periods according to the grade of half stuff.

Drainer walls and bottoms always in perfect condition.

Production standards in the half stuff department must be checked regularly against the actual results. The aim of foremen and executive should be to improve predetermined standards without impairing the quality of the product. To be satisfied with merely reaching the figures set by standards would mean a standstill and not progress.

The "Famous" Drainer Inventory

It is comparatively easy to obtain accurate cost figures in the rag room. Here, the so-called invisible waste—dust, dirts and some fibers that disappear in the processes of thrashing, sorting and cutting of rags, can always be expressed in exact percentages, as it constitutes the difference between the weight of baled rags on one hand and the weight of dressed rags and recoveries on the other hand.

It is quite different with the half stuff in the drainers. Although washer reports show how many cars of cooked rags have been washed and dumped into the drainer, it is always very difficulty to find true car equivalents for the half stuff taken from

the drainers. Many and continuous tests are required to arrive at a relatively correct car equivalent or dry weight per car of half stuff. The situation is, furthermore, aggravated through the wide range of "wetness" or moisture in the half stuff. The stock on top of the drainer is always drier than the material in the middle and further down toward the bottom; the degree of moisture increases with the depth and is regulated by the length of time of drainage and storage of half stuff in the drainer.

Since for obvious reasons, not every car of half stuff that is taken from the drainer can be tested as to its dry weight, the problem of correct car equivalents will always be on hand and add considerable to the difficulties in securing correct manufacturing costs. However, frequent tests of half stuff taken from the various positions in the drainer —a gradual working down from top to bottom and taking samples from every representative layer, enables the management to arrive at comparative correct equivalents of dry weights per car of half stuff. In spite of hard work and frequent tests, very often the number of cars taken from the drainer is far out of the way of the number of cars calculated to be in it. It may happen, that the drainer is supposed to contain 20,000 lb. of dry half stuff and the car of dry half stuff is calculated at 200 lb. Ordinarily and according to all rules, 100 cars of half stuff should be dug from that particular drainer, but the beater reports, nevertheless, will show that 110 or only 90 cars have been obtained.

The weight of a car of half stuff from the top of drainer is very much lower than that of a car taken further down—the stock on the top being dry and light while the moisture increases the further down the stock is taken. This situation is especially bad in small orders of one or two beaters of rag content furnish, since here the desired percentage of rag fiber cannot be exactly gauged. Of course, it does not matter in a 100 per cent rag furnish.

As stated before, not each car can be tested for its dry content, and for that reason, it has so far remained a physical impossibility to exactly determine the correct dry weight of every car of half stuff taken from a drainer.

The writer recently discussed this problem with a paper mill cost man and dwelled particularly on discrepancies in drainer inventories. On being asked whether he experienced the same trouble the cost man emphatically said **no.** He explained, that in spite of the varying car weights, his beater engineers easily determined the exact percentage of rags and sulphite in a beater by sticking the hand into the furnished beater and thus ascertained the density as well as the accurate dry weight of the furnish to the fraction of a percent. His drainer inventory, consequently, has never a discrepancy, or at the worst is out two or three pounds on 17,000 to 20,000 lbs.

Honi soit qui mal y pense.

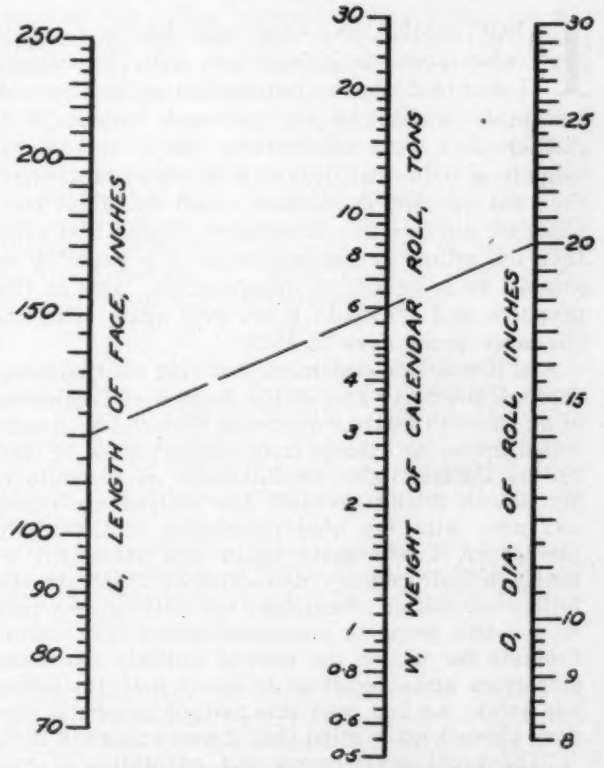
Calender Roll Weight Nomograph

By D. S. DAVIS

THE accompanying chart presents calender roll weight data (Pulp and Paper Mill Catalogue, pg. 13, 1931) in convenient nomographic form, enabling rapid solution of the equation,

$$W = \frac{L D^2}{8000}$$

which gives an approximation of the weight (W) in



tons, of a calender roll when the length of face (L) in inches, and the diameter of the roll (D) in inches, are known.

The dashed line indicates that a 20-inch roll, 120 inches long, weighs six tons.

Every business man should look for ways and means to improve his business and his service. Advertising and other trade-quickening methods should be put to immediate use. We need a rebirth of the spirit that has given this country a foremost place among the nations.—William N. Doak, Secretary of Labor.

Current Thought by William Sibley

Odd Bits Gathered Along the Way

PROPHESIES, like fresh milk left in a warm temperature, frequently turn sour. Yesterday, I stumbled into two prophesies (one written and one oral) which, in my personal opinion, will clabber in a very short time. Both statements came from industrialists, and both were to the effect that our present depression would doubtless continue for another two or three years, and that even then the return to commercial activity would be so gradual as to be almost imperceptible. One of the prophets said: "I doubt if we ever again shall see the large profit days of 1928."

And it was this statement that sent me thumbing through the dusty files of the **Journal of Commerce** in an effort to locate a quotation that had been published there—an excerpt from a report made in 1886 by the United States commissioner of agriculture. My search finally revealed the desired quotation, and now, with the kind permission of that daily newspaper, I will quote again this statement of nearly a half century ago—just to illustrate the fallacy of current reasoning, not only on the part of the two prophets mentioned above, but, unfortunately for us, on the part of entirely too many employers and executives in every field (including our own). As you read this gem of prophetic wisdom, please keep in mind that it was written in 1886.

"The rapid development and adaptation of machinery have brought what is commonly called overproduction, so that machinery and overproduction are two causes so closely allied that it is quite difficult to distinguish the one without taking the other into consideration.

"In England, Belgium and France, railroads and canals, that are really needed, have been built. Germany is provided with a full network of railroads, and in the United States railroad construction has been all out of proportion to the increase of products to be carried. Harbors and rivers are sufficiently developed, and warehouses, water and gas works, tramways, etc., are largely provided for. The Pyrenees and the Alps are tunneled, and the Suez canal has been built. Terrestrial and transoceanic lines of telegraph have been laid and the merchant marine has been transformed from wood to iron.

"The nations of the world are overstocked with manufacturing plants far in excess of the wants of production. On all sides one sees the accomplished results of the labor of a half century. What is strictly necessary has been done, oftentimes to superfluity. This full supply of economic tools to meet the wants of nearly all branches of commerce and industry is the most important factor in the present industrial depression.

"It is true that the discovery of new processes of manufacture will undoubtedly continue and this will act as an influence, but it will not leave room for vast amount of capital which has been created during the last 50 years; or afford employment to the vast amount of capital which has been created during that period. . . . . The Day of Large Profits Is Probably Past."

There you are. That's what the United States commissioner of agriculture said, back in 1886. His prophesies were all right—only they soured. . . . . But while you are smiling at **him**—smile also at the industrialists who, just ten years ago, said in all seriousness, that the depression of 1921 would probably never adjust itself to the point where the past measure of prosperity could be enjoyed—and also to the industrialists who today are saying that automatic machinery and labor saving devices have brought us to the point where our "man-made civilization is on trial." The depressing ideas of industrial leaders in 1921 were close parallels to the expressed and recorded opinions of leaders in 1886. And the depression of 1931 is suspiciously akin to our old friend of 1921. So—writers and prophesiers —beware of the souring influence of time. . . . . Not to speak of history, which insists upon repeating itself.

* * *

Well, the 1931 Convention of the American Legion is now history. More fortunately than we know,

this year's jamboree of the Heroes' Union, heeded the advice of our common-sense President and turned thumbs down on the contemplated request for more bonus cash. So for a year at least, the United States Pocketbook is safe from the devastating inroads of a malicious demand, fostered chiefly by self-seekers and politicians.

During the recent Squabble, I was a "hero" in France for well over a year—and with the exception of the two periods when I was committed to a hospital, and one Lieutenant,—I had a whale of a good time. Perhaps that is why I have always been steadfastly opposed to bonuses or pensions, and have, during the past 12 years, left a long trail of articles and editorials which clearly indicate on which side of the Battle of the Bonus I have fought.

In thinking of bonuses and pensions for war service—here are two facts which might be interesting.

It is almost unbelievable but true that the last widow of the war of 1812 died during 1931—and that she had been collecting a government pension to the day of her lamented demise. It seems that as a very young woman she had married a veteran—just in time to inherit his pension. . . . So, gentle reader, when you swear at last year's taxes, just remember that a portion of them went to pay for a war which was fought and won before your grandfather wore his first outing flannel nightshirt.

The second fact is: if we had never imposed such a thing as a "Bonus Loan" to ex-soldiers this year—and had never considered attempting to immunize American wheat from the immutable law of supply and requirement through the establishment of a Federal Farm Board—that this Government would not now be laboring under a national deficit.

* * *

While we are thinking about war, and the effects of war, it may be surprising knowledge to some of you to learn that the United States (either as individuals, banks, or Federal Government) has loaned Germany more money, by $100,000,000, than she has had to pay out, total, in reparations.

* * *

That's pretty serious. And thinking is hard work. So here is a bit of news about the effects of the war which is in lighter vein. . . . . Every time I happen to get together with a bunch of the fellows who served in the Army during the late fracus I am more convinced that the war was fought and won by a one-man-army. I was the man. Everybody else was an officer—or at least a regimental sergeant major. Yes sir, it's a fact—I have yet to find anyone who served in the American Expeditionary Forces who wasn't at least a top sergeant. All reminiscent stories have the same beginning: "One night the Colonel told me to take the company, and—" Or: "I told the sergeant to detail his platoon for ——". Or even: "One of my lieutenants told me that ——". There aren't any privates left any more. From the claims made, I guess there never was any. So here I go, putting myself publicly on record, in imperishable ink. I enlisted as a buck private—never got a darn bit farther—was discharged as a buck private—after having spent many moons in France where I never heard a shot fired or saw a puff of smoke! So please tell me if the Americans won the war—because if they did, I have a lot of responsibility on my shoulders.

* * *

Well—we displayed our American statesmenship in Brazil, didn't we? As modern exponents of the age-old game of trading, we should be glad that Mark Twain is dead. Some of our scintillating statesmen in Washington thought it would be a good idea to trade some of the wheat we have but don't want for some of Brazil's coffee, which they have but wish they didn't. So, action being the child of the father thought, we traded 25,000,000 bushels of wheat for a million or so bags of coffee. Now there was a brilliant exhibition of American shrewdness! A highly profitable deal—for Brazil. We got the coffee, and that was all. Brazil got the wheat but that was not all. Because, Brazil slipped one over on us by stipulating that we can never dispose of our coffee, except in little dribs here and there. She also said that to effect this trade, Brazilian ships must do all the transporting—our wheat south, and her coffee north.

Then, just as soon as the deal was closed, Brazil slapped an embargo on American wheat flour thereby enabling her to mill the wheat she had traded for, but shutting out all American flour. Thus our ships get no cargoes, our flour mills lose a good market, and we have a lot of coffee we can't economically get rid of. Such is life in times of depression—and American statesmanship.

* * *

Education, either from books or experience, is the means to wisdom. Since wisdom is all important, so might it be said of education. Here in this country we have recognized that fact and are rightly building more and better schools, and buying some of the best brains in the country to educate our children.

The deans of some of our great universities, they say, receive salaries of $8,000.00 a year. Some of our night-howling cabaret entertainers are said to receive $1,000 a night.

* * *

Each morning, the great mail order houses in Chicago send their motor trucks to the Post Office to bring back the day's mail. During the day they have as high as six deliveries—each delivery weighing tons. And that's the way they know how much money they are receiving, too—by weight. When the mail is brought to the receiving room, it is weighed. And whether it be ten or 20 tons, they know almost exactly how much money it contains, how many orders are in it, how much business correspondence, how much advertising material, etc., etc. Over a long period of time they have been able to build up tables of averages which show, month by month, the average number of letters to a pound, the average number of orders in each pound, the average amount of each order, and so forth. Mail order business is a business of averages—scientifically handled.

The Paper Industry Safety Contest

July and August Scores (Cumulative)

39 Mills Finish Second Perfect Month

PERFECT SCORES

Division I — Paper and Pulp Mills

	ENTRANT	MILL	LOCATION
GROUP A			
GROUP B	The Champion Coated Paper Co.	No. 2	Hamilton, Ohio
	Nekoosa-Edwards Paper Co.	Port Edwards	Wisconsin
	The Champion Coated Paper Co.	No. 1	Hamilton, Ohio
	Canada Power & Paper Corp.	Laurentide Div.	Grand Mere, Que.
	Continental Paper & Bag Corp.	Rumford	Maine
	The Mead Corp.	Kingsport	Tennessee
GROUP C	Della Paper & Pulp Co.	Eau Claire	Wisconsin
	Ticonderoga Pulp & Paper Co.	Ticonderoga	New York
	Pioneer Paper Co.	Los Angeles	California
	Cornell Wood Products Co.	Cornell	Wisconsin
	The Crystal Tissue Co.	Middletown	Ohio
	Consolidated Water P. & P. Co.	Biron	Wisconsin
	Strathmore Paper Co.	West Springfield	Massachusetts
	International Paper Co.	Montague	Turners Falls, Mass.
	Hollingsworth & Vose Co.	East Walpole	Massachusetts
	Lowe Paper Co.	Ridgefield	New Jersey
	The Adams Bag Co.	Chagrin Falls	Ohio
	Consolidated Water P. & P. Co.	Appleton	Wisconsin
	Fibreboard Products, Inc.	Sumner No. 5	Washington
	Kimberly-Clark Corp.	Lakeview	Neenah, Wis.
	The Upson Co.	Lockport	New York
	United States Envelope Co.	Morgan Paper Co.	Lititz, Pa.
	Hollingsworth & Vose Co.	West Groton	Massachusetts
GROUP D	Continental Paper & Bag Corp.	Ashland	Wisconsin
	United States Gypsum Co.	North Kansas City	Missouri
	International Paper Co.	Livermore Falls	Maine
	Hollingsworth & Whitney Co.	Madison	Maine
	United States Gypsum Co.	Oakfield	Oakfield
	The Gardner & Harvey Co.	No. 3	Middletown, O.
	International Paper Co.	Riley	Maine
	United States Gypsum Co.	Gypsum	Ohio
	Division II — Remanufacturing		
	The Champion Coated Paper Co.	Coating	Hamilton, Ohio
	Kimberly-Clark Corp.	Neenah	Wisconsin
	The Gardner & Harvey Co.	No. 4	Middletown, Ohio
	Container Corp. of America	Huntington	West Virginia
	Container Corp. of America	Cleveland	Ohio
	Consolidated Water P. & P. Co.	Stevens Point	Wisconsin
	Bemis Bros. Bag Co.	E. Pepperell	Massachusetts
	Container Corp. of America	Natick	Massachusetts

IMPERFECT SCORES — Division I

	Key	Rank	Points Credit	Points Debit
GROUP A	PA-10	1	849.104	
	PA-11	2	773.888	
	PA- 6	3	708.400	
	PA- 3	4	671.008	
	PA- 2	5	567.008	
	PA- 1	6	450.752	
	PA- 5	7	191.728	
	PA- 7	8	31.264	
	PA-12	9		858.512
GROUP B	PB-13	7	808.848	
	PB-15	8	771.072	
	PB- 9	9	765.312	
	PB-17	10	760.000	
	PB-19	11	745.344	
	PB-20	12	743.632	
	PB-24	13	738.384	
	PB-23	14	602.704	
	PB-14	15	553.120	
	PB- 1	16	460.720	
	PB- 4	17	290.608	
	PB-21	18	215.344	
	PB-25	19	197.104	
	PB- 3	20	194.112	
	PB- 8	21		41.728
	PB- 6	22		265.504
	PB- 8	23		323.552
	PB-12	24		434.880
	PB-10	25		492.768
	PB- 2	26		718.240
	PB- 7	27		2,630.224
	Division II			
	RC- 2	9	634.688	
	RC- 5	10	590.656	
	RC- 4	11	245.712	
	RC- 8	12	229.456	
	RC- 3	13	216.832	
	RD- 1	14	16.144	
	RD- 4	15		30.432
	RC-11	16		1,601.424
GROUP C	PC-39	18	719.880	
	PC-49	19	662.176	
	PC-44	20	612.128	
	PC-11	21	605.088	
	PC-38	22	530.176	
	PC-25	23	497.568	
	PC-20	24	412.336	
	PC-18	25	354.160	
	PC-52	26	303.104	
	PC- 9	27	141.920	
	PC- 2	28		21.264
	PC-27	29		47.072
	PC-42	30		97.392
	PC-31	31		102.016
	PC- 4	32		141.488
	PC-21	33		212.944
	PC-19	34		424.816
	PC-30	35		504.032
	PC-28	36		640.352
	PC-37	37		655.744
	PC- 3	38		937.136
	PC-53	39		1,103.486
	PC- 7	40		1,475.552
	PC-40	41		1,960.032
	PC- 8	42		2,065.312
	PC- 5	43		2,092.176
	PC- 6	44		2,932.512
	PC-47	45		2,934.752
GROUP D	PD- 2	9		618.832
	PD- 4	10		2,229.696
	PD-10	11		6,360.864

Withdrawn: PA-9; PB-22, 26, 29
PC-26, 29, 41

Reports Incomplete: PB-11, 28
PC-13, 22, 35, 55, 56, 57, 58
PD-3, 12
RC-1, 7

Something New in Bookbinding

Of the new uses for paper recently developed, a new style bookbinding is of particular interest to paper manufacturers. A. C. McClurg & Co., Chicago, have just issued two new books in which they have used a new style of bookbinding, which has many advantages over the old style cloth binding which has been in use for many years.

These new books are bound in paper covered cases with the cover illustration printed in colors directly across the front and back covers and backbone. The colors are guaranteed not to fade. Following the printing of the covers, a heavy coat of varnish was given them, which permits washing with a wet cloth.

The jackets, or wrappers, are of DuPont cellophane, attached to which are two tabs upon which is printed a description of the story.

Upon the endsheets of "Snow Trenches" by Daniel H. Steel, one of the books just issued, is printed a decorative map of North Russia, in which the story takes place.

The paper used in these books is of a soft, creamy shade, and was made by the West Virginia Pulp & Paper Company. The printing was done with Mergenthaler latest book type face, which is a reproduction of the original types of John Baskerville, the noted 18th century English printer, paper maker and letter founder.

The appearance of these books, made entirely of paper, is very pleasing and McClurg & Company should be commended for having taken a step ahead in present day bookmaking.

New Paper Mill at Avery, Ohio

A modern 100-inch fourdrinier paper machine and beater room equipment are being installed in the new paper mill which is being converted by the recently organized Avery Paper Corporation from the old Hoover plant at Avery, Ohio.

The new concern will begin operating under exceptionally favorable prospects, since the American Crayon Company, of Sandusky, has contracted to take all of the art papers and those suitable for use in schools, produced by the new mill which will be devoted to the manufacture of poster, drawing and high grade manila papers, sulphite and groundwood specialties.

The plant comprises two modern brick buildings and a power plant.

The officers of the Avery Paper Corporation are James T. Begg, chairman of the board; C. L. Hoag, president and general manager; J. H. Salisbury, vice-president and chief engineer, and M. L. Rankin, secretary-treasurer.

Mr. Hoag, formerly with the International Paper Company, was more recently in charge of William H. Millspaugh's model paper mill, maintained by the Paper and Textile Machinery Company, in Sandusky, Ohio. Mr. Rankin was formerly connected with the latter concern and assisted Mr. Hoag in his experimental work. Mr. Salisbury was formerly chief engineer of the Paper and Textile Machinery Company and has had wide experience in the manufacture and operation of paper making machinery. Mr. Begg, formerly U. S. congressman from the Sandusky district, has supervised the financing of the new concern.

Kalamazoo Entertains T.A.P.P.I.

Local Technologists Club Installed into National Body at Fall Meeting Held September 24, 25 and 26

IN a finely arranged three-day program, September 24, 25 and 26, the city of Kalamazoo, Michigan, containing 17 paper and paper goods manufacturing concerns and ten paper mill equipment and material manufacturers, was host to the 1931 fall meeting of the Technical Association of the Pulp and Paper Industry. It is the custom of this organization to accept invitations to hold fall meetings each year in localities that are centers of pulp and paper manufacturing and where stage settings are appropriate for such occasions.

In the city of Kalamazoo, there has been functioning since August, 1927, an enthusiastic group of technical men connected with the paper mills and allied manufacturing concerns of that section, known as the Paper Technologists Club. Ivar Lundbeck, then chief chemist of the Lee Paper Company, was the founder and first chairman; Elbert G. Milham, chief chemist of the Bryant Paper Company, vice-chairman, and Arthur C. Dreshfield, of the Paper Makers Chemical Corporation, secretary and treasurer. Mr. Lundbeck has since returned to his native land, Sweden.

The club was a success from the start, and attention has been attracted to the splendid work it has done.

At the regular meeting held on December 10, 1930, it was unanimously decided to petition the Technical Association of the Pulp and Paper Industry for a charter as the Kalamazoo Valley Section, and a charter was issued by the officers of the national association on May 4, 1931.

The occasion of this fall meeting was reserved therefore for the installation of this local section into the national body by its officers and president, M. A. Krimmel, of the Hammermill Paper Company. The present officers of the Kalamazoo Valley Section of T.A.P.P.I. are: Maxwell D. Bardeen, Lee Paper Co., chairman; W. Kent Kidder, Allied Paper Mills, vice-chairman; Harold R. Miller, Paper Makers Chemical Corporation, secretary-treasurer.

T.A.P.P.I. Executive Meeting Held in Appleton

A meeting of the T.A.P.P.I. Executive Committee had been held the previous day at Appleton, Wisconsin, coincident with the dedication exercises of the Institute of Chemistry, described elsewhere in this issue. The Kalamazoo meeting had been graciously set back for a day to permit the attendance of the Committee at both of these important occasions. Following the meeting at Appleton, a number of the Executive Committee accompanied by Miss Helen U. Kieley of the American Writing Paper Company and W. Boyd Campbell of the Canadian Forest Products Laboratory, flew to Kalamazoo in a 14-passenger Ford tri-motor plane, via the route across Lake Michigan. It was a thrilling trip that was enjoyed by every one.

Arrangement of Program

The program of the Kalamazoo meeting was arranged into three morning and afternoon sessions, three luncheons and two dinners. Registration took place at both the Park American and Columbia hotels, which being across the street from each other, there was no time lost in making connections, and the meetings were opened and conducted on schedule. There was also provided the delightful sense of variety of environment.

The meetings of the first day including luncheon and an informal dinner in the evening were held in the Columbia hotel. Those of the second day and noon luncheon were held at the Community House of Kalamazoo Vegetable Parchment company. In the evening, with the ladies as guests, an informal dinner took place at the Park American hotel. On the third day, Saturday, busses carried the men and ladies to the Gull Lake Country Club, where the business sessions were again convened, and a buffet luncheon served, followed in the afternoon by games on the club grounds. One perfect day of mild weather attended the opening sessions and the registration exceeded 175 men and 25 ladies. The following days were not so fair, which interfered not at all, however, with the good humor of the crowd—but it was unanimously decided to discharge the "weather committee" without pay.

Ladies Entertainment and Other Committees

The ladies were delightfully entertained during the three days in a finely arranged program consisting of auto trips, a theater party, luncheons, bridge, and a demonstration by a domestic science expert of how various types of paper can be used to advantage in the home. The latter took place at the Community House of the Kalamazoo Vegetable Parchment company, and was followed by a trip through the mill. The Committee on Meals and Entertainment for the Ladies consisted of the following: Mrs. E. F. Whittington, chairman; Mrs. R. A. Hayward; Mrs. F. D. Libby; Mrs. W. Kent Kidder; Mrs. W. J. Lawrence.

The other local committees were as follows: Ralph A. Hayward, K. V. P. Co., general chairman; **Administration**—W. J. Lawrence, Paper Makers Chemical Corp., chairman; J. C. Wood, K. V. P. Co., treasurer; A. C. Dreshfield, Paper Makers Chemical Co., correspondent; **Publicity**—W. Kent Kidder, Allied Paper Mills, chairman; E. J. Turner, Paper Makers Chemical Co.; **Arrangement**—F. D. Libby, K. V. P. Co., chairman; C. E. Mueller, Paper Makers Chemical Co.; E. G. Milham, Bryant Paper Co.; H. C. Bradford, Rex Paper Co.; **Program**—E. F. Whittington, chairman; M. D. Bardeen, Lee Paper Co.; H. C. Bradford, Rex Paper Co.; C. C. Schneider, Hawthorne Paper Co.

A Well Arranged Printed Program

One of the noteworthy features of the affair, was the finely arranged printed program, containing preprints of the majority of papers presented at the meetings. There were blank pages provided and interspersed between the program of each session to enable one to make notes of the discussions. Printed photographs of T.A.P.P.I. officers and those of the Kalamazoo Valley section, and all committee members were included. Pages were also reserved for messages of welcome, general information about Kalamazoo and transportation details, and brief historical reviews of the Technical Association and the Kalamazoo Technologists Club. A number of advertisements were included in the book. The program page size was 9 x 12 inches. Besides 28 pages of preprints, it contained 58 pages and cover. An appropriate frontispiece was an illustration of a painting by Jan Steen (1626-1629) entitled "The Alchemist." The latter was loaned through the courtesy of the Fisher Scientific Co., Pittsburgh, Pa.

THURSDAY'S SESSIONS

Promptly at 9:30 a. m. Thursday, the first session was called to order, with President M. A. Krimmel presiding and R. G. MacDonald, secretary. Reserving introductions and addresses of welcome until a later time of the day, the regular order of the program of technical discussions was taken up.

Sulphate of Alumina and the Alums

The first paper read was entitled Sulphate of Alumina and the Alums, by J. J. Healy, Jr., of Merrimac Chemical Co., Boston. The statement is made that sulphate of alumina or papermakers' alum ranks third among the heavy chemicals of the country from the standpoint of tonnage. The alums—soda alum, potash alum and ammonia alum—are of considerably less importance but must be considered. In 1930, there were used in the United States 300,000 tons of commercial sulphate of alumina, 17,000 tons of iron free and 20,000 tons of the alums. Available distribution figures of this total of nearly 340,000 tons indicate that 60 per cent is used for water treatment, 35 per cent for papermaking and five per cent for miscellaneous uses. A large part of the water treat-

ment figure can be accounted for by water treated in paper mills.

Some of the uses for alum are described and a brief history relates that in 750 A. D., the Arabian chemist, Geber, was supposed to have used "alum,"—probably a soda, or potash or similar alum, but sulphate of alumina did not come into prominence until about 1890, since which time, its popularity has greatly increased. The reason for this popularity is an economic one, since the papermaker is, of course, desirous of having as high a content of alumina and sulphuric acid, in other words aluminum sulphate, in his alum as possible, because these are the active components in sizing.

The alums, ammonia alums in particular, have always had some advantage as regards low iron content over sulphate of alumina but to-day iron free alum is as good and perhaps better from this standpoint.

The sources and method of manufacture of commercial alum are described. As to what is the future of alum in papermaking, it is thought in the light of present knowledge there is immediately available no product which has the cheapness of alum and at the same time possesses the two properties which seem to be essential in a chemical to be used for fixing rosin; namely an acid reaction in solution and the presence of an element which forms an insoluble compound with the rosin, or is itself deposited in an insoluble form on the fiber. Co-operation of the papermaker and the alum manufacturer in determining the physics and chemistry of the sizing process will undoubtedly lead to improvements in its composition.

Determination of Sizing Ability and Efficiency of Beater Sizing Agents

An attempt to develop a laboratory procedure for the determination of the sizing ability and efficiency of beater sizing agents, was described in a paper presented by A. C. Dreshfield, technical director of Paper Makers Chemical Corp. in collaboration with G. R. Haggerson and H. F. Heller, research chemists of the same company. Since there has been little or nothing heretofore published concerning a detailed procedure for determining the ability and efficiency of beater sizing agents on a small scale, the problem of developing a reproducible method was instituted about two years ago in the research division of the technical department of Paper Makers Chemical Corporation.

The usual laboratory procedure for testing the strength of pulps was used as a logical starting point, and the methods used in these first unrefined trials are briefly outlined.

Lack of Uniform Results—The first and great discrepancy which appeared was the lack of uniform sizing results, not only on duplicate runs using the same sizing agent but also variations in results on separate sheets of one run, and even over portions of a single sheet. Attention was directed to the drying operation for a possible explanation. It was soon found that there existed a considerable variation of temperature over the surface of the steam heated dryer plates. Various dryers were therefore tried in an attempt to obtain greater uniformity, with unsatisfactory results.

A Modified System of Drying—Abandoning all forms of commercial dryers, a system was tried which is a modification of one developed by D. W. McCready at the University of Michigan. This method has the advantages of good air circulation, complete freedom from cockling, accurate temperature control, excellent finish, and most important of all, high uniformity of results and a closer approximation to mill conditions, as the sheet dries under tension. Its limitations are that it is somewhat cumbersome and that it permits no alternation of surface exposure. The sheets also show one-sidedness, simulating a Yankee machine dried paper. No work has yet been done using the vacuum dryer, due to lack of necessary equipment.

Improvement in Laboratory Beater—In a further effort to approach average mill conditions as nearly as possible, the laboratory beater which ordinarily is incapable of circulating stock unaided at a consistency higher than three per cent, was improved by the installation of a large motor-driven paddle wheel on the narrow side of the beater just opposite the roll. This contrivance takes the stock away from behind the backfall and builds up a head of stock in front of the roll, enabling the beater to circulate stock at consistencies as high as 4.5 per cent. Incidentally, a large amount of work done with all factors constant except beater consistency, which was varied from 4.5 per cent down to one per cent, indicated increased sizing with decreased consistency.

Procedure in the couching and pressing operations is described. All testing of the finished sheets is done at a temperature of 70 deg. Fahr. and a relative humidity of 65 per cent. All samples are allowed to condition for 12 hours or longer before any tests are made on them.

An arbitrary method of running a complete test on a new sizing agent is described using bleached sulphite pulp and should these tests show the material worty of further experimentation, the runs are duplicated on unbleached sulphite, soda, cooked old papers, groundwood, kraft and rag. If the material efficiently sizes the majority of the pulp mentioned, it is considered logical to attempt to size a series of representative furnishes for typical standard papers.

No provision has been made in the procedures for factors such as water variations, hot beaters, reuse of whitewater, etc. These being peculiar to individual mill practice, they must be duplicated only when testing a given sizing agent for one particular mill and consequently it is felt they have no place in a general procedure. It is reminded also that such tests only serve as the basis for mill trials which should be the final criterion.

In discussing the paper, among a number of suggestions and remarks that were made, it was recommended that water being such a variable factor, distilled water should be used as a standard.

General Chairman R. A. Hayward Introduced

Previous to the reading of the last paper on the morning's program, Chairman Krimmel introduced Ralph A. Hayward, general chairman of the meeting, who in a few words expressed a cordial greeting and remarked that the formalities of official welcoming the guests would be completed at the evening dinner.

Bleaching Kraft Pulp

Dr. Otto Kress, technical director of the Institute of Paper Chemistry, Appleton, Wis., was then called upon to present "A Study on the Bleaching of Kraft Pulp," which he had prepared in collaboration with Roy L. Davis. It was a valued contribution and publication of any of its contents or conclusions has been reserved by the author until a later date. Many questions were asked about the comparative qualities of sulphite and sulphate pulps, and it was the assertion of the speaker that pulps of the future will be sold solely on chemical content.

LUNCHEON

The luncheon on Thursday was held in the Crystal Room of the Columbia Hotel, M. D. Bardeen presiding. Seated at the speakers' table were M. A. Krimmel, Allen Abrams, R. G. MacDonald, J. H. Slater, J. F. Rhoades, W. O. Johnson, Michal Redmond, H. C. Bradford, H. G. Noyes and J. K. Speicher.

Training Problems in Pulp and Paper Industry

The first speaker was Harold G. Noyes, co-ordinator for pulp and paper education, Wisconsin vocational schools, Appleton, Wis., whose subject was Training Problems in the Pulp and Paper Industry.

The T.A.P.P.I. Educational Committee has for the past four years been considering problems within the industry, the solution of which may be accelerated by the development of well organized educational programs. Pay-roll jobs in the industry have been classified in accordance with the objectives of each. The definitions and objectives of the various phases of educational work have been set up. Efficiency factors for measuring programs of vocational education have been determined, and a survey of the various types of educational programs now in existence throughout the country has been made.

In making up the major divisions, the general plan as used by the Technical Association in its organization has been used. Subclassifications are listed under the five major divisions: management; operating; engineering; technical con-

trol; research and development. The education is divided into two major fields: general and vocational.

General education includes the training in reading, writing and mathematics necessary to the successful discharge of the responsibilities of an employee in the industry. Vocational education as far as the pulp and paper industry is concerned, is that type of education and training which meets any one or more of the following objectives:

(1) To assist individuals already employed in the industry; to add to the special knowledge and skill appertaining to their work and thereby—(a) improve their prospects for steady and permanent employment; or (b) prepare themselves for promotion or advancement.

(2) To prepare individuals for profitable and advantageous assets in the way of special knowledge and skill.

The efficiency factors in a pulp and paper education program of the vocational type are listed, also the training agencies, their definitions and objectives, including those agencies for assisting individuals already employed, which type of training is known as trade extension education.

The Education Committee is at present engaged with the project of compiling material in accordance with the above stated objectives. The Federal Board for Vocational Education has been invited to assist by undertaking a nation-wide study of the industry for the purpose of determining the training problems within it. The trade and industrial staff of the Federal Board under the leadership of Mr. Frank Cushman, chief of the division, started this study in several Wisconsin paper mills the later part of July. The accumulated data will be edited by the Federal staff and checked for technical correctness by members of the Technical Association and finally made available to every person in the industry who is interested.

A subcommittee of the Education Committee headed by C. E. Libby of the New York State College of Forestry, Syracuse, N. Y., is making a study of the place of the technical men in the industry with a view to working out training agencies and courses of study which will enable the industry to obtain better trained men.

Mr. Noyes' paper was received with marked attention and appreciation. There was no discussion.

The Story of Nitrocellulose

Following this, a moving picture was projected of "The Story of Nitrocellulose," and a talk given on it by J. K. Speicher, of the Hercules Powder Company. The manufacturing process that was pictured was that taken in the company's plant at Wilmington, Del., where the capacity to manufacture nitrocellulose is 3,000,000 lb. per month. This entertaining feature was greatly appreciated.

The afternoon was spent in visits to the mills of the Rex Paper company and the Hawthorne Paper company.

THURSDAY EVENING DINNER

An informal dinner was held for the men in the Columbia hotel beginning at 6:30 p. m. The ladies were dined elsewhere following which they were entertained at a theater party in the State theater.

General Chairman R. A. Hayward presided at the dinner and introduced Mr. Clark McKenzie, a gentleman who is very popular in masonic circles throughout the State and whose Scotch ancestors have handed down to him that peculiar ability to tell good stories and act the part of a jovial toastmaster.

Some Interesting Facts Told of Kalamazoo

Mr. McKenzie spoke with pride of his city, mentioning that Kalamazoo had adopted the Commission-Manager form of government in 1918, since which time there has been put into effect a "pay-as-you-go" policy, and the bonded indebtedness of the city has been reduced to $19,000, or approximately 30 cents per capita, and this has been accomplished with a tax rate of 11 mills.

Introduction to the Mayor

In terms of praise, he called upon the mayor. Dr. S. R. Light, who in extending a very warm and cordial welcome on the part of the City described its highly progressive public spirit. Since 1925, the City which covers nine and a half square miles and has a population of 68,000, has purchased land and built two nine-hole golf courses and a 310-acre airport where a hangar accommodating eight planes has been constructed. This airport is a distribution point for air mail in Michigan. The city also maintains 37 public parks with an extensive zoo in one of them.

Dr. Light spoke of the musical and educational activities which center there. Building construction the past few years has added three beautiful churches besides a civic auditorium and a City Hall.

Kalamazoo is known as a church-going city, he said, having 57 churches and religious organizations, which probably accounts for the small number of men (77) on the police department pay-roll.

President Krimmel Responds

A fitting response to the Mayor's address was given by President Krimmel, who took the occasion to review some of the current activities of the Technical Association. It is expected that new plans that are now being effected will contribute largely to the service which the association renders to the industry.

Talk Given by Planning Engineer

Jacob L. Crane, Jr., a planning engineer of Chicago, who it was said had contributed a part to the new city plan of Kalamazoo, gave a most interesting talk on his personal observations during a recent trip he had made through China and Russia. Speaking of the latter country and its people, it was his opinion they offer no particular problem to world commerce at present, and that as a defensive nation they are far stronger than an offensive one. The primitive conditions in China were exhibited in moving pictures that showed also many rare scenes.

The evening's entertainment was further enlivened by the tricks of a clever magician, Walter G. Harris. Fischer's Globe Trotters, Michigan's famous dance orchestra, furnished the music.

FRIDAY'S SESSIONS

All of the business sessions on Friday were held in the auditorium of Parchment Community House. Busses took the visitors from the hotels and the meetings started promptly at 10:00 a. m.

De-Inking Wastes

The first paper that was presented was "De-Inking Wastes" by C. C. Irving, chief chemist of Falulah Paper Co., Fitchburg, Mass. Waste from a de-inking plant consists usually of alkaline water, holding in suspension or in solution soaps, ink residues, short paper fibers and clay. Therefore, the problem is to separate the solids from the water, treat the water so it can be reused in the mill, and find a use for the solid matter. A settling basin is given as the best medium of separating the solids from the water, particularly if the proportion of short fibers is small. If there is a large proportion of fibers, a suction type filter will reduce the solid content to less than .5 lb. per 1,000 gallons. The solids recovered from a filter will be quite alkaline; therefore if this is detrimental to the reuse of the material, a settling basin, clarifier or other device should be used that only the concentrated sludge will go to the filter.

The water from a settling basin or filter will be very dirty, but if enough acid be used to acidify before settling, the ink residues and soap will settle out, leaving a slight yellow tinge which can be cleaned up entirely by the addition of a small amount of chlorine. There is work being done on certain filtering materials, one of which, it is claimed, can be mixed with the water in equal proportions with the ink and soap to be removed, and on filtering, a crystal clear solution will be obtained. Water thus reclaimed would be alkaline and would have to be neutralized before reuse in most paper mill processes.

Work is suggested on devising methods of de-inking not dependent wholly on alkali. Other substances have been found but they are high in cost when compared to soda ash, which however might be more comparable when the reuse of water, reclamation of solids and stream purification are considered.

The reuse of reclaimed solids presents a difficult problem. It seems certain that this material consisting largely of clay, cannot be used to any great extent in the paper mill. It appears, therefore, that de-inking mills will have to operate or support by-product plants to get rid of these solids. Because of the large percentage of water contained in the recovered sludge, it is logical that some use be made of it, such as in the manufacture of molded articles using cement, plaster of paris, casein or other suitable adhesives.

De-Inking Waste Paper Stock

Following a discussion of Mr. Irving's paper, the next was a related subject entitled "De-Inking Waste Paper Stock" by C. A. Shubert, assistant superintendent, Dill & Collins Co., Philadelphia. This paper deals with comparisons between the rotary boiler and circulating tank methods. The detailed procedure of the former method including stock washing as practiced in the author's mill is illustrated and described. Likewise, the circulating cooker method is also described. The costs per ton of the various items are distributed as follows:

	Circulating Cooker	Rotary Boiler Type
Raw material	(30% shrinkage) 66.5%	(20% shrinkage) 66.3%
Labor	11.2%	13.7%
Electric power and steam	11.1%	10.1%
Chemicals	10.1%	12.9%

The rotary boiler system is favored in spite of its higher labor and power cost and inconvenience of filling and dumping boilers, because of the superior quality of product obtained. It being largely a batch system, better control of the color and cleanliness in washing and bleaching is obtained.

Steam Requirements for De-Inking Process

The next related paper in this group was by E. G. Milham, chief chemist of Bryant Paper Co., on "Steam Requirements for the De-Inking Process."

The cooking phase of the de-inking process is divided into two general classes: the low density, low pressure cook, and the high density, high pressure cook. In the first case, the prepared waste paper is cooked at from five to seven per cent density at atmospheric pressure. In the second case, the paper is cooked at about 40 per cent density at 30 to 50 pounds pressure. The two types of cooking have totally different steam requirements.

Low Density Process—In the study of the low density process, it is assumed the paper will be cooked at six per cent density at 212 deg. Fahr. for four hours, and that the defibering of the papers will be carried on simultaneously with the cooking operations. A theoretical consideration of the subject gives the following figures:

Bone dry waste paper per cook	Pounds	10,000
Bone dry soda ash per cook	Pounds	400
Other chemicals		None
Pounds water per cook		156,700
Average starting temperature of waste paper	deg. F.	70
Average starting temperature of cooking water	deg. F.	60
Average finishing temperature of paper and water	deg. F.	212
Specific heat of stock		.5
Specific heat of water and soda ash		1.0
Heat required to bring stock from from 70 to 212 deg. Fahr.	B.t.u.	710,000
Heat required to bring water and soda ash from 60 to 212 deg. Fahr.	B.t.u.	23,879,200
Total primary heat required	B.t.u.	24,589,200
Heat lost through evaporation etc., during cooking process		16,411,000 (By measurement)
Total heat required including losses	B.t.u.	41,000,200
Available heat per pound of steam (10-pound pressure)	B.t.u.	1,150.0 (136-212 deg. F.)
Total theoretical pounds of 10-pound steam required	Pounds	35.652
Approximate value of steam per 10,000 pounds papers		$12.48 (35c/1000 pounds)
Total theoretical weight of 10-pound steam required per pound of waste paper	Pounds	3.5652

The process of de-inking waste paper is divided into the unit operations of grading, shredding, dusting, cooking, defibering, screening, washing, bleaching and rewashing. To adequately discuss the steam requirements of the process, a brief review of the above operations is given, although none of them other than the cooking and defibering normally require the use of steam.

High Density Process—In the study of the high density process, it is assumed the paper will be put into the cooler at 40 per cent density (1½ lb. of water per lb. of old papers), and that the paper will be cooked for seven hours at 45 lb. steam pressure. The defibering will be carried out independently for the cooking operation and at five per cent density. The stock will be heated to 140 deg. Fahr. during the defibering operation in order to maintain proper color and substantially reduce the amount of time and power required.

A theoretical consideration of the subject gives the following figures:

Bone dry waste per cook	Pounds	10,000
Soda ash per cook	Pounds	300
Other chemicals		None
Pounds of water per cook		15,000
Average starting temperature of waste paper	deg. F.	70
Average starting temperature of water	deg. F.	60
Specific heat of stock		.5
Specific heat of water and soda ash		1.0
Final temperature of stock and water in cooker	deg. F.	292.2
Heat required to bring stock from 70 to 292.2 deg. F.	B.t.u.	1,111,000
Heat required to bring water from 60 to 292.2 deg. F.	B.t.u.	3,333,000
Total primary heat	B.t.u.	4,444,000
Heat lost through radiation and blow off	B.t.u.	989,000
Total	B.t.u.	5,433,000
Total pounds of steam required for cooking		5.326
Steam required for heating defibering water to 140 deg. F.	Pounds	8.374
Total steam required per 10,000 pounds stock	Pounds	13,700
Total steam required per pound of waste paper	Pounds	1.370
Approximate value of 45 pounds cooking steam at 50c		$2.66
Approximate value of 10 pounds heating steam at 35c		2.93
Approximate value of steam per 10,000 pounds papers		$5.59
Approximate value of steam per 2,000 pounds papers		$1.12

Conclusions—From a comparative study of the two processes, the following general conclusions are drawn:

1. It is impossible to cook papers with the low density process at temperatures much under 210 deg. Fahr.
2. If a reasonably low steam cost is obtained, it is essential that water for the low density process be preheated with waste heat.
3. Radiation and evaporation losses in the low density process amount to about 40 per cent of the total heat required.
4. The steam required per pound of paper in the low density process is 3.56 pounds.
5. The steam required per pound of paper in the high density process is 1.37 pounds.
6. The steam required per pound of paper in the low density process provided water is preheated to 185 deg. Fahr. with waste heat is 1.62 pounds.
7. The steam required per pound of paper in the high density process provided defibering water is preheated to 140 deg. Fahr. with waste heat is .53 pounds.
8. The high density process is more easily controlled than the low density process.
9. The high density process cooks hard inks more readily than the low density process.
10. Generally speaking, the low density process produces a more easily washed and bleached stock than does the high density process.
11. Everything considered (steam, power, labor, investment, chemicals, flexibility and quality) the low density process when properly installed and operated shows a decided balance in its favor as compared with the high density process.
12. There is considerable room for improvement and development in both processes.

Recooking Pulp Not Blown from Digesters

Some notes on the loss in yield and quality of pulp as occasioned by recooking the same in digesters which were not blown clean, were presented by Dr. Otto Kress. The paper was a joint contribution by Dr. O. Kress, Harry J. Irwin and Karl L. Buff. The conclusions in this paper have been reserved by the authors for later publication.

Chromium-Nickle Castings for Sulphite Mills

The final contribution in the morning's session was a paper on "Chromium-Nickel Castings in the Sulphite Industry" by B. S. Summers and J. D. Corfield, of Michigan Steel Casting Company, Detroit.

The demand for acid resisting metals in the sulphite industry is requiring more knowledge of metals and understanding of metallurgy by those in the industry who are responsible for the selection of equipment.

Of the chromium-iron and chromium-nickel-iron alloys that have been investigated in an effort to solve the problems of corrosion incident to the manufacture of sulphite pulp, the one which has achieved the most prominence is the well-known 18-8 alloy; that is, an alloy containing 18 per cent chromium and 8 per cent nickel, the balance mostly iron. This alloy in rolled forms which are susceptible to heat treatment has shown excellent resistance to the sulphite acids and its use is steadily increasing. The same alloy has not been generally satisfactory in cast forms, for reasons that are explained.

The answer to the demand for sound castings appears to be a modification of the 18-8 alloy which would permit the use of higher carbon content without at the same time depreciating the resistance of the alloy to corrosion. This involves a substantial increase in the chromium content to 28 or 30 per cent, and a moderate increase of nickel to nine or ten per cent. Such an alloy with 25 per cent carbon has been found to be absolutely impervious to attack by sulphurous acid under the usual conditions.

Scarcely any difference is apparent between the machining properties of the 30 chromium, ten nickel alloy as cast, and the 18-8 alloy which has received heat treatment, if the former has been properly made.

There is no great difficulty in obtaining sound castings of any reasonable size, large or small, of a metal that will resist the sulphite acid. Valves and fittings can be obtained which will have indefinite life. Digester heads, neck rings, bottom sleeves, and many other parts are available in chromium-nickel alloy with assurance they will be as sound as possible to make them of any other material, not to mention their corrosion resisting properties.

Luncheon in Parchment Community House

Luncheon was served in the dining hall of the Community House, W. Kent Kidder presiding. Singing was lead by Don McDowell, personnel manager of K.V.P., and a tenor solo rendered by Mr. Weston. Following this, the business session was resumed under the chairmanship of M. D. Bardeen.

Research in the Use Requirements of Papers

A report of the Use Requirements Committee was prepared by P. K. Baird, of the Forest Products Laboratory and submitted in his absence by C. E. Curran, of the same institution.

The objectives are (1) to delineate the general sheet properties of papers; (2) to determine these properties in order of importance for each kind of paper and paper board; (3) to select—or to request development of, by the proper committee, where not now available—a standard test method for each property, and (4) to set maximum and minimum values for each property for each specified paper, after having established approximate commercial values.

The Committee's accomplishments thus far consist of a preliminary delineation of general sheet properties and the assignment of members who will select or develop the proper test method to evaluate a specific property and set specifications on all papers for that property.

The general sheet properties so far delineated are: thickness, density, ream weight, appearance, strength, elasticity, absorbency, penetration, physical composition, structure, chemical composition and performance.

All of the more specific properties of papers and paperboards which can be classified under these general divisions, are discussed in outline.

The development and selection of a standard test method for each property based on the character of papers now in service will be worked out by the following sub-committees under the chairmanships named:

Use-Analysis Survey—P. K. Baird.

Thickness Method and Specifications—E. A. Bergholz.

Density Method of Specifications—G. R. Alden.

Ream-Weight Method and Specifications—G. R. Alden.

Strength-Properties Method and Specifications—R. H. Simmons.

Appearance-Properties Method and Specifications—G. K. Hamill.

Absorbency-Properties Method and Specifications—W. Otis Roe.

Elastic-Properties Method and Specifications — R. H. Doughty.

Penetration-Properties Method and Specifications—R. H. Norris.

Physical-Composition Method and Specifications—R. F. Reed.

Chemical-Composition Method and Specifications — J. E. Minor.

Structural-Properties Method and Specifications—W. A. Chilson.

Permanence-Properties Method and Specifications—P. B. Davidson.

The use-analysis subcommittee will attempt to classify all uses of papers and paperboards and to arrange the general and specific properties in order of importance for each particular use.

Each sub-chairman will be expected to render a report of progress at the next annual meeting.

The two succeeding papers presented were "Air Conditioning in the Paper Industry" by W. G. Schlichting of Clarage Fan Company, Kalamazoo, and "The Estimation of Cellulose in Pulps by the Kürschner-Hoffer Alcohol-Nitric Acid Method" by Dr. Harry E. Lewis and E. R. Laughlin, which was presented by Dr. Otto Kress.

Visits to Parchment Mill and New Laboratory of Paper Makers Chemical Co.

The afternoon was spent in visiting the power plant and new two-machine mill of the Kalamazoo Vegetable Parchment Co. and the new research and testing laboratory of the Paper Makers Chemical Co.

FRIDAY EVENING DINNER

An informal dinner at which the ladies were present was held on Friday evening at the Park American Hotel. Memory was vivid of a former occasion held in this same room and likewise as brimful of hospitality when the local paper mill men were hosts to the first Interstate meeting of the Cost Association of Kalamazoo Valley and the Paper Technologists Club in June, 1928.

W. J. Lawrence, president of the Paper Makers Chemical Corporation and chairman of the convention administration committee, presided, and in welcoming the guests warmly, introduced a number of those seated at the speakers' table. Among the latter was Sig. Kepatia, of Bombay, India, who spoke in good English of some of the things that have made Mahatma Ghandi idolized as a leader in his country.

President Krimmel was called upon and took this occasion to install the Paper Technologists Club into a full fledged section of the Technical Association of the Pulp and Paper Industry. Relating briefly of the history of the national body, its aims and purposes, he congratulated Chairman Bardeen, of the local club, on the success of his organization and presented him a gavel as an insignia of his office. Mr. F. D. Libby, chairman of the Arrangement Committee of the fall meeting, was also congratulated and presented with a small token of appreciation for his efforts.

Announcement was made of another "consolidation" that had been consummated during the day. Maurice O. Reuben, of the York Haven Paper Co., formerly a student at Appleton, Wis., was wedded to a young lady whom he had met while a resident in that city. The happy couple were warmly congratulated and accorded best wishes.

Dr. Wm. McCracken, head of the chemistry department of the Western State Teachers College, Kalamazoo, was then introduced as the toastmaster of the evening. His remarks were witty and full of mirth. In tribute to the technical men of the industry, he pointed out the increasing number of industrial research laboratories in the United States, from 560 in the year 1920 to the present number of more than

1,600, was proof that their importance is becoming more generally recognized, and that pulp and paper manufacturers have found their research laboratories to be one of their biggest dividend paying departments.

The Cycles of Civilization

The inspiring climax of the meeting was found to be in the brilliant address by Dr. W. D. Henderson, director of the extension division of the University of Michigan, on his chosen subject, "The Cycles of Civilization." This learned pedagogue of ripened years who was previously professor of physics at Michigan U. talked of his observations and study of man's instincts from pleasure and recreation to scientific achievement, business and public service. Their effects upon the cycles—rises and falls in the world's history, were contemplated, and what the curve will show as we emerge from th crises of the present day. Of the three distinct forms of government today—Communism, Facism and Democracy, it was conjectured that in a true administration of the latter, the world's economic structure promises to become more readily and permanently adjusted.

A splendid musical treat was enjoyed in the rendition of a group of songs by the Kalamazoo Male Chorus, an aggregation of singers whose work was exceedingly artistic. Tenor solos were rendered by Mr. Weston, a member of the chorus. The instrumental music was played by Fisher's Orchestra.

SATURDAY'S SESSIONS

The sessions on Saturday were held at the Gull Lake Country Club. The weather was not so desirable, and participation in golf and other sports that had been arranged was comparatively small. A buffet luncheon was served by the ladies.

Measurement of Opacity of Paper

The first paper presented was "Methods and Instruments for Opacity Measurement," by M. N. Davis, of Kimberly-Clark Corporation, Neenah, Wis. The multiplicity of opacimeters, opacity testers, and similarly named instruments which are available has led to the use of as many different units of opacity as there are instruments. No two seem to agree numerically.

A reader will pronounce the opacity of a sheet at which he is looking to be poor or satisfactory according to his ability to distinguish the printed matter on the back side of the sheet or upon the sheet immediately below. The ideal opacity test must therefore simulate the conditions of actual reading, must respond to light in the same way as does the human eye and must measure the tendency toward "show through." It should be capable of comparing the opacities of two samples of papers which differ widely from each other in color and appearance, giving a reliable measurement of the opacity of each.

Three classes of opacity testers are described and results discussed: (1) those which measure the ratio of the intensity of light reflected from a single sheet backed up by a black body, to the intensity of light reflected by a single sheet backed up by a standard white reflector, the ratio thus determined being called the "contrast ratio"; (2) those which depend upon the measurement of the percentage of light transmitted by a single sheet of the paper whose opacity is to be determined; (3) those which depend upon the transmission of light by a number of sheets of the paper under test, rather than upon one sheet alone.

Another instrument, designed and built by the author, is hoped might eliminate some of the fundamental inaccuracies of other methods. The author has had occasion to make frequest use of an optical photometer designed for the measurement of contrast ratio, a commercial opacity tester which determined the percentage of light which fails of transmission through one sheet of paper, and an instrument used for opacity determination by the "sheet count" method. It has always been possible to check the results obtained by any of these methods by the use of a photoelectric photometer designed for the measurement of "printing opacity," "contrast ratio" and the reflecting power of either a single sheet or a thick pad of paper or pulp. The operation of the instrument is described.

An attempt has been made to point out the fundamental inaccuracies which must exist when so many different qualities are used as measures of a single paper quality.

The conclusion is reached that while "printing opacity" seems to be the best measure of opacity, coefficients in use at present are sufficiently accurate for the comparison of similar samples and will lead to large errors only when the opacities studied are very low or when color differences exist.

Relation of Sheet and Fiber Properties in Paper

The next paper was a contribution of work done by R. H. Doughty in the Forest Products Laboratory under the research fellowship jointly supported by the American Paper and Pulp Association and the Technical Association of the Pulp and Paper Industry, on The Relation of Sheet Properties and Fiber Properties in Paper. It is the second report of a series and deals with the Variation of Ultimate Tensile Strength with Basis Weight and Related Factors.

Most workers in the field of paper testing have been impressed with the necessity of correcting physical test data for the factor commonly termed "basis weight." This is done specifically in the bursting test, which is expressed as "points per pound per ream," or "per cent," and in the tearing test, which is expressed as "grams per pound per ream." It is done also in the tensile test, by calculating the results in terms of "breaking length" rather than expressing them as load or strength at rupture.

The breaking length should presumably be constant for sheets of one pulp made up under identical conditions but of different weights. As the basis weight is increased from a low value, the breaking length at first increases to a maximum and then decreases.

The study of which the paper treats was designed to determine with some exactitude the cause of this behavior to show its significance in paper testing and use, and to ascertain in a preliminary way whether the variation of tensile strength with basis weight could be taken as a measure of three-dimensional fiber orientation in the sheet, which is the formation factor in sheet structure.

Conclusions—From a study of the variation in ultimate tensile strength of test sheets, made from unprocessed spruce sulphite pulp, at various solid fractions and basis weights, it is possible to draw certain conclusions that may be tentatively applied to paper sheets in general. These conclusions are:

1. Sheets of constant basis weight show a mathematically regular increase in tensile strength with increase in solid fraction; the increase in solid fraction is obtained by increase in wet pressure.

2. Sheets of the same solid-fraction values show a regular decrease in tensile strength with increase in basis weight when the volume of stock used in their formation is kept constant and consequently the consistence is varied in proportion to the basis weight; this strength decrease is primarily a result of the consistence change rather than of the weight change.

3. Sheets made up under constant wet pressure show a continuous increase in solid fraction with increase in basis weight, as a consequence of greater shrinkage on drying.

4. As a consequence of the two effects just noted, sheets made up under constant wet pressure and with a constant volume (variable consistence) of stock first increase and then decrease in tensile strength when basis weight is increased from a low value.

5. The relations involved may be expressed as

$$S = k\, C^n\, F^m$$

where k is a characteristic of the pulp that is designated "fiber strength at unit consistence," and m and n may or may not be characteristics.

6. Sheets of low basis weight, 21.5 pounds, for example, show an anomalous behavior that may be either specific or an effect of inaccuracy in thickness measurements.

7. The various effects of basis weight just noted appear to be explainable from the standpoint of the fiber arrangement, particularly the concept of orientation of fibers perpendicular to the surface of the sheet.

Measurement of Hydration

A contribution of the Stuff Preparation Committee, entitled "Hydration Measurement by the Boiling Method," by

T. R. Le Compte, industrial fellow at the Mellon Institute, was next presented. The paper is a review of the work of Michimaro Nakano and of independent complementary studies made by the Manila Hemp Paper Fellowship of the Mellon Institute of Industrial Research. It is published by permission of the John A. Manning Paper Company, Troy, N. Y., donor of the Manila Hemp Paper Fellowship.

A search had been made for a definition and method of measurement of hydration. Experience had finally led progressively from a study of the effect of cold alum solution on wetness (slowness), and then in turn to that of boiling alum, dilute acid, dilute alkali and finally water. It was thus found that the exposure of beaten stuff to the effect of boiling water has a positive and accurately duplicable depressing effect on the wetness. Nearly all of Nakano's studies were made with chemical wood pulp, manila hemp stock having been used by the author, Mr. Le Compte.

Papermaker's hydration is recognized in the mill, so far as the beaten stuff is concerned, by a soft, slippery, slimy feel, a greater power to retain water; i. e., a greater resistance to drainage of water, a greater degree of sliding on the cylinder mold, and a greater tendency to crush at the presses. So far as the paper is concerned, hydration is thought to produce greater shrinkage during drying, and to yield a more transparent, harder, denser and more tinny sheet.

In view of the fact that the term "hydration" is used so generally to characterize the condition of a beaten stuff, it is important to arrive at a satisfactory definition of the term, and to find a method of measuring it quantitatively. The word appears to be used, at times, synonymously with the term wetness, which is measured by the well-known freeness or slowness testers. It is believed that these types of testers have proved to be the most practical and convenient method of obtaining a quantitative measure of the degree of beating. It is generally accepted that slowness and freeness tests are responsive to the quality of hydration, as well as to the degree of fibrillation and cutting, and that the result of a test evaluates the several quantities. It is understood that a beaten stuff of short mean fiber length and low hydration may give the same slowness or freeness test as a well beaten stuff of long mean fiber and high hydration.

This complex relationship might conceivably serve as a basis for the measurement of hydration, providing it were found feasible to destroy the hydration by a treatment which does not affect the wetness due to the mean fiber length and to the degree of beating. In such a case, the difference between the slowness number before and after treatment would presumably be a quantitative measure of hydration.

A method of this type has been developed, termed the "boiling method," which consists of measuring the wetness—i.e., slowness or freeness, of the beaten stuff before and after subjecting test samples to a one-hour boiling, followed by cooling. The values obtained by Nakano by the use of this boiling method are given and his conception of the nature of wetness due to beating is interpreted; also some independent evidence supporting this conception.

Following some discussion of the above subject, John Traquair of the Mead Corporation presented a paper by James d'A. Clark of the same company on "Standardization of the Bursting Strength of Paper."

Reuse of Relief and Waste Liquors in Sulphite Cooking Acid

The last paper presented during the morning session was a treatise by G. H. Chidester, author in collaboration with C. E. Hrubesky and J. N. McGovern, all of the Forest Products Laboratory, Madison, Wis., on the subject "Reuse of Relief and Waste Liquors in Sulphite Cooking Acid." In summary and by way of introduction, it is stated that sulphite pulping experiments at the Forest Products Laboratory show that cooking acid containing considerable amounts of either late relief liquor or waste liquor does not affect the quality of the pulp, providing the color of the reused liquor is not too dark.

The object of the experiments described was to determine the effect upon the yield and quality of the pulp of the presence of either relief liquor or waste liquor in sulphite cooking acid. In this case, relief liquor is the liquor released from the digester at a temperature of 140 deg. C. before the digestion is completed. Waste liquor is the liquor drained from the pulp after the digestion has been completed.

The efficiency of chemical and heat recovery in the sulphite pulping process makes desirable the use of as much relief liquor as possible in the cooking acid. In ordinary mill practice relief liquor is used in varying amounts up to about 25 per cent of the volume of the cooking acid. In some of the pulping processes that have been recently patented, such as the Decker and Chemi-pulp systems, the relief liquor is used in still greater amounts.

Opinions differ widely as to the effect upon the quality of the pulp of the presence of relief liquor in the cooking acid. Klein and Oman believe that the organic compounds have a beneficial effect. Dieckmann, on the contrary, states that the effect is unfavorable and that only the relief liquor obtained below 110 deg. C. should be used. Hägglund is of the opinion that the sugar substances present in the relief liquor act catalytically to decompose the sulphurous acid (sulphites) into sulphur and sulphates and therefore the relief liquor has a detrimental effect in the cooking process. In a number of small scale digestions in which the cooking acid contained one-third relief liquor, Hägglund found the color of the pulp to be darker, the ash and the lignin content to be higher than normal. In addition, a greater amount of sulphate was formed and the yield was lower for the same lignin content of the pulp than when no relief liquor was used.

On the other hand, Swanson and Monsson in 1926 at the Forest Products Laboratory made three digestions using amounts of relief liquors up to 25 per cent by volume and found little or no effect upon the yield or strength of the pulp.

It is conceivable, that certain components of the relief or waste liquor, such as the strong organic acids which may be formed, might be detrimental to the pulping process, however, other components, such as dissolved carbohydrates, might be beneficial in preventing a certain amount of hydrolysis of the cellulose. The use of waste liquor containing carbohydrates and from which the lignin compounds have been wholly or partially removed has recently been patented by Johnsen.

The work reported was undertaken because of the increased use of relief liquor in the newer digestion methods and the apparent lack of definite information on the effect of its presence in the cooking acid. The results were evaluated by observing the effect of relief and waste sulphite liquors in the cooking acid upon the yield, strength, and chemical composition of the resulting pulp.

Conclusions—The experimental work is described and discussed with the following conclusions:

(1) Relief liquor was used to replace at least 50 per cent of the water in preparing cooking acid with no apparent effect on the resulting pulp.

(2) When waste liquor from a fresh lime base cooking acid was used in amounts up to nearly 100 per cent of its volume in the cooking acid, the cooking time was reduced and the color of the pulp was darker than that obtained when no waste liquor was used to produce a medium hard quality of pulp.

(3) Waste liquor from fresh soda base cooking acid could not be used in large quantity to produce an easy-bleaching pulp without burning the pulp before the digestion was completed.

(4) The repeated use of lime base waste liquor in quantities up to 20 per cent for preparing the cooking acid for three successive digestions had no apparent effect upon the resulting pulp. However, when relief liquor was used in conjunction with waste liquor the pulps burned readily and the results were similar to those obtained when waste liquor alone was used.

Saturday Afternoon Meeting

The concluding session was opened by E. F. Whittington, who expressed on the part of the local committees their gratitude that the meetings had been so well attended. Two visitors from Finland were introduced; Baron Wilhelm von

Koskull, Ingenior, Kymmene, and Anton af Forselles, general manager of A.B.J.W. Enqvist O.Y., Tammerfors.

H. C. Bradford, secretary of the Rex Paper Company, presented a paper "Measuring the Efficiency and Proving the Value of the Chemical Engineer" following which there were extended remarks by R. A. Hayward and R. G. MacDonald on the definition of a chemical engineer and his place in the pulp and paper industry.

Thomas J. Burke, secretary of the Cost Department of the American Paper and Pulp Association, made a splendid appeal for technical co-operation in the development of cost standards in the paper industry. He praised the aims of the Technical Association and expressed the hope that he might personally become a member.

That profits might again be the order in manufacturing pulp and paper, standard costs must be installed, and a large share of the opportunity for this lies with the technical men in working out operating standards and standard furnishes —and seeing to it that they are used throughout the mill. There are two kinds of people today, he said: past thinkers who are hoping for the return of profit, and present workers who are managing for profit. Today it is necessary that research and technical control should be linked with accounting control.

General Chairman Hayward brought the meeting to a close with a response of appreciation to Mr. Burke for his impressive talk and for the progressive step he had taken in seeking membership in the Technical Association.

The rest of the afternoon was devoted to games, such as archery, horseshoe pitching, pistol practice and golf. Winners received prizes donated by the following concerns: General Dyestuffs Corp., Paper Makers Chemical Corp., Edgar Brothers Co., Bulkley Dunton & Co. and Penick & Ford Sales Co.

Penna.-New Jersey Supers Meet in Philadelphia

At a conference of executives and members in Philadelphia on Saturday evening, September 12, the Pennsylvania-New Jersey division of the American Pulp and Paper Mill Superintendents' Association laid plans for the fall meeting of the division, which is to take place on the third Saturday of October at the Benjamin Franklin Hotel in Philadelphia. On the committee of arrangements, S. M. Hesser, Hinde & Dauch Paper Co., Gloucester, N. J., is chairman, with the following associates:

J. Carl Schmidt, du Pont Co., Philadelphia; John C. Diefenderfer, Paper Makers' Chemical Corp., Holyoke, Mass.; William M. Shoemaker, National Vulcanized Fibre Co., Yorklyn, Del.; Linville Mullin, Jessup & Moore Paper Co., Wilmington, Del.; Frank E. Winslow, General Electric Co., Philadelphia; V. L. Sanderson, Philadelphia representative of Terry Steam Turbine Co., Hartford, Conn.

Discussion of Practical Topics

The conference was preceded by a dinner. In the absence of E. C. Gildenzopf, chairman of the division, the chair was taken by James G. Ramsey, former national president, who led a discussion on several matters of practical interest. He then called on George W. Bickering, practical papermaker in the Paper Section of the Bureau of Standards, to give an account of the character of the work done there. Mr. Bickering has been connected with the Bureau of Standards for nearly 20 years and has been identified with nearly all of the important researches on paper manufacture and pulp and paper utilization conducted there. One of the novelties in paper manufacture elaborated by him during his connection with the Paper Section of the Bureau of Standards is an asbestos paper, light in weight and of course quite incombustible. He invited members of the division to visit the paper manufacturing plant and laboratories when in Washington.

pH Determinations

In addition to talks by President Ramsey and others, Frank E. Winslow spoke of the growing use of the photoelectric cell in the regulation of stock consistency, and Dr. Diefenderfer, of the Paper Makers' Chemical Corp., described a new product consisting of a pulverized rosin size which is wholly soluble in cold water. By its use, a saving in alum amounting to about 25 per cent was said to be possible. Ralph W. Kumler, of Bennett, Inc., Cambridge, Mass., who is a resident of Wilmington, Del., discussed the application of hydrogen-ion concentration in connection with the reactions between rosin and alum. These pH tests formed the subject of some discussion, Mr. Schmidt speaking of the value of determining pH in making tinted papers, with check tests at the headbox every three hours. Mr. Ramsey said that pH tests were sometimes misleading unless carefully conducted, an observation which brought the remark from Mr. Schmidt that extreme care was necessary in making the determination. He knew of an instance where perspiration on the hand of a beater engineer holding the tube had seriously affected the reading.

Permanency of paper was said by Mr. Ramsey to be of the utmost importance and he considered that superintendents, particularly of writing paper mills, should concentrate attention on this.

Stock Chest Agitation

The subject of stock chest agitation was brought out by Mr. Schmidt who asked for opinions from those present concerning what they considered was the best method of keeping the stock moving. What was said to be an effective method by Mr. Ramsey was to draw the stock from the bottom of the chest by a pump on the outside and discharge it back into the chest with force enough to produce both downward and whirlpool movements. Mr. Schmidt remarked that a pumping arrangement of this kind was working satisfactorily in a Southern mill. The power consumed in operating a pump for this purpose was estimated by Mr. Winslow at 10 hp.

In closing the meeting, Chairman Ramsey urged all present to work for a large attendance of members at the fall meeting in Philadelphia on October 17.

Paperboard Industries Association

The September meeting of the Paperboard Industries Association was held at the Clifton hotel, Niagara Falls, Ontario, September 16 and 17. The sessions were productive of much constructive work, and the situation in the industry and possibilities for betterment were very thoroughly discussed.

The general meeting of the three groups of the association in joint session was held on the afternoon of the first day with President J. H. Macleod presiding. Among subjects presented by the Executive Committee for discussion at this session was the matter of representation of the industry at the Century of Progress Exposition to be held in 1933 at Chicago. It was also announced that a questionnaire submitted to the membership had decided the annual meeting would be held in New York City rather than Chicago. The dates of the meeting are November 17, 18 and 19.

The Folding Box, Paperboard and Container Groups held separate sessions, at which reports were received from committees of the respective groups and general business matters discussed. Each group appointed a nominating committee to nominate a group vice-president and members from each group for election as members of the Executive Committee at the annual meeting in November.

Harry Phillips Davis

Dr. Harry Phillips Davis, vice-president and director of the Westinghouse Electric and Manufacturing Company and chairman of the National Broadcasting Company, passed away at his home in Pittsburgh, September 10.

Dr. Davis was born in Somersworth, N. H. in 1868. He graduated from the Worcester Polytechnica Institute and joined the detail engineering department of the Westinghouse Company in 1891. Five years later he was put in charge of the department and in 1904 was made manager of the company's engineering department. In 1911 he was elected a vice-president.

As widely known as was Dr. Davis in engineering and industrial fields for his achievements, it is for his development of radio broadcasting that the public knows him best. His initiative and foresight were demonstrated in the start of the first broadcasting station, KDKA.

Dr. Davis is survived by his widow, a daughter and a son.

New building of the Institute of Paper Chemistry at Lawrence College, Appleton, Wis.

New Institute Dedicated

Gifts Including Memorial Tribute to J. A. Kimberly Announced at Impressive Ceremonies Attended by Leaders of the Pulp and Paper Industry

DEVOTED to the interests of pulp and paper chemistry, the only institution of its kind in the United States, the Institute of Paper Chemistry of Lawrence College, Appleton, Wis., dedicated its fine new structure on September 23, in connection with the matriculation day convocation services. This important occasion was attended by well-known industrialists, educators and leading men of the pulp and paper industry.

Dr. Finley Formally Dedicates the Institute

Formal dedication of the building was conducted by Dr. John H. Finley, editor of **The New York Times.** He addressed the student body and visitors dedicating the Institute "to the highest and most efficient use of language and to the economical manufacture of the product which carries the knowledge of the ages to all mankind." He paid tribute to the rapid advance of science and knowledge, reminding his hearers also that paper has had a vast part in disseminating instruction, news and entertainment to the world. Paper manufacturers, he said, are the custodians of the art of preserving this knowledge. He congratulated Lawrence college for having made possible this Institute and then formally dedicated it.

Keys to the new Institute were presented to Dr. Henry Merritt Wriston, president of the college, by Ernst Mahler, vice-president of the Kimberly-Clark Corporation, and president of the board of trustees of the Institute. It was at this point that he made the most interesting announcement that a gift of $100,000 had been made to the Institute by James C. Kimberly in memory of his father, J. A. Kimberly, one of the founders of the Kimberly-Clark Corporation and one of the earliest graduates of Lawrence college. The gift is to be used for the erection of another building, perhaps next spring, to house the research library, now the largest on paper manufacturing in North America, and to provide other space already needed.

Mr. Mahler said that in achieving their purpose of erecting and equipping the building at a total cost of about $250,000 for adequate instruction and research in the practices and problems of the pulp and paper industry, the trustees have had the support of individuals and corporations from all parts of the country and that no less than 253 gifts had been received. He announced additional gifts of $15,000 to meet fellowship requirements in the next three years.

Dr. Wriston accepted the keys, thanked the trustees and paid tribute to the late J. A. Kimberly, saying "it is appropriate that the latest adventure of Lawrence college should be a memorial to one of its earliest constituents."

Addresses by Representatives of Associations

At noon the college and institute officials and visitors were guests at a luncheon at the Riverview Country club, where further addresses were given. Mr. Mahler again spoke, declaring that "Nowhere is the waste greater than in the training of men in the technical problems of the paper industry. It has been estimated that the loss is as great as 80 per cent. Training these men is not the function of the paper mill, but of educational institutions." He added that many more technically trained men are needed and that better days for the industry will not come until these trained men are provided.

High commendation was paid to the establishment of the Institute and the opening of the new building by M. A. Krimmel, chief chemist of the Hammermill Paper Co. and president of the Technical Association of the Pulp and Paper Industry. The primary object of technical men in the paper and pulp industry, he said, is to keep production costs down and at the sametime improve quality. It has become generally recognized that an institution like the Institute of Paper Chemistry is needed to provide highly trained men necessary to bring about these objects. While men are being trained in the United States Forest Products Laboratory and in the universities to be of service to manufacturers, these institutions lack the facilities to give intensive training so desirable. Mr. Krimmel suggested the addition of a course in economics because technically trained men with a knowledge of economics will be in a position to apply

trained minds to such matters as the present business depression.

Further congratulations were extended by Colonel B. A. Franklin, president of the American Writing Paper association and vice-president of the Strathmore Paper Co., of Massachusetts. He said perhaps the Institute marked the beginning of a new system of education, in that it is putting emphasis upon methods of doing things rather than upon the more abstract phases of education and culture. He remarked that the Institute is the "dawn of a new day" in the paper industry and is hopeful it will show manufacturers how to make better paper and make it cheaper.

From S. L. Willson, president of the American Writing Paper Co., came official greetings of the American Pulp and Paper Association, of which he is president. A great deal of credit is due Mr. Mahler and his associates for organizing the Institute and putting it into operation, he said. Assurances were given that he would be a booster for the Institute.

Fred Boyce, of Wausau, Wis., officially representing the Superintendents' association, and as one of its founders, handed a check of $1,000 to Mr. Mahler for the Institute. The association is greatly impressed with the possibilities of the Institute, he said, and desires to assist it.

President Hoover Sends Greetings

Congratulations of President Herbert Hoover were read at the meeting. He said in part:

"The organization of the Institute has been widely recognized as a progressive and pioneer step. It helps to ground the industry in sound scientific knowledge and to assure trained technicians to bring the benefits of continuing research to the business. This not only makes for sound development within the industry, but enables it more intelligently and adequately to serve the public demand. I congratulate those responsible for bringing the enterprise to the stage signalized by the dedication of the building to serve as a center of your constructive activities."

The Institute is directed by Dr. Otto H. Kress, widely known chemical and research authority, who also figured prominently in the exercises. The building is equipped for the making of paper by any ordinary process in miniature machines, and has a series of laboratories for all kinds of tests and experimentation. Its research library contains more than 3,000 volumes, and large amounts of reference material and is becoming the largest of its kind in the world.

C-E Multiple Circulation Boiler

Cumbustion Engineering Corporation, 200 Madison avenue, New York, has recently developed a new type of boiler which provides a logical solution to the problem of insuring adequate circulation and correct steam liberation under the most severe conditions of operation. This boiler is now offered to the steam generating industry.

The salient features of this development are as follows: The C-E Multiple Circulation Boiler departs from the conventional design in two essentials—tube arrangement and steam liberation.

The tubes in the first pass of the boiler are arranged so that half of them enter the front drum and the other half enter the middle drum. The tubes in the second pass are arranged so that half the tubes enter the middle drum and the other half enter the front drum.

This boiler is available in sizes ranging from about 2,000 sq. ft. to 26,000 sq. ft. of heating surface. It is adaptable to any type of firing and may be set double.

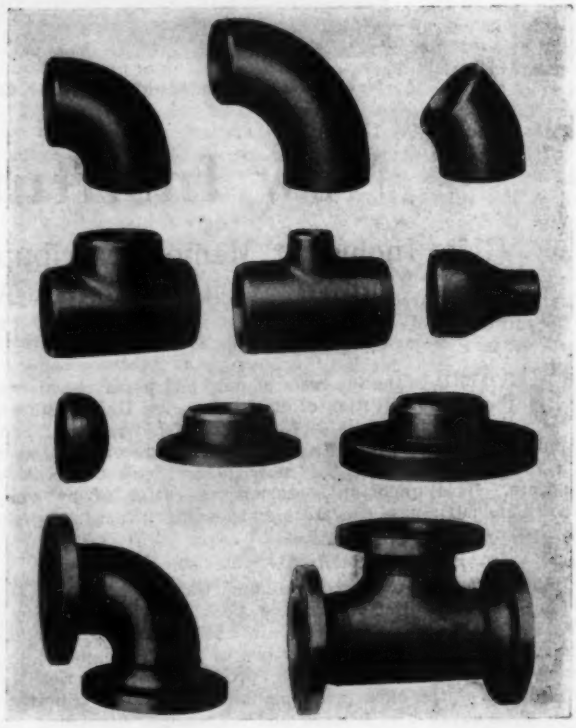
The unique tube arrangement effects a double circulation in the boiler. One circulation is up half the tubes in the front tube-bank to the front upper drum, then down the tubes running into the middle tube-bank to the lower steam and water drum. The other circulation is up the other half of the tubes in the front tube-bank which run into the middle upper drum then down half the tubes in the middle tube-bank to the lower steam and water drum.

This splitting of the circulation results in equalizing the steam liberation in the upper front and middle drums and thus eliminating the intense turbulence which is present in the conventional types of multi-drum bent tube boilers, in which the greater part of the steam is liberated in the front drum—consequently, the many disadvantages which accompany such turbulence are also eliminated.

In order to assure dry steam production, the steam circulators are increased in number over the conventional design. A further change in design consists in connecting the steam circulators from both the front drum and the middle drum directly into the rear drum. This design effects two improvements over the conventional boiler, namely, drier steam and lower steam velocities.

New Pipe Fittings for Welding

The Taylor Forge & Pipe Works, Chicago, have developed a complete line of seamless steel pipe fittings for welding, consisting of elbows, tees, reducing tees, bull plugs, and reducing nipples, as well as Taylor forged steel butt welding flanges which have already been on the market for over three



years. All sizes to 24-in. inclusive will be ready for distribution within the near future, but at this writing only sizes 12-in. and smaller are available. The tees are made in sizes 2-in. to 8-in.

This line of seamless pipe fittings for welding is unique in many respects. It permits entire pipe systems fabricated by welding to be installed with only the use of true circumferential welds acknowledged to be the easiest to make, resulting in increased efficiency of the welder, and full strength welds. Erection is considerably simplified.

The manufacturing methods are on a mass production basis employing patented processes to a great extent. The elbows are made without thinning or buckling of the walls, and further have the advantageous feature of short tangents to facilitate welding and accurate lining up. Elbows are made of the standard center to end measurement of American standard extra heavy screwed fittings, and with end to center to end dimension equal to one and one-half times the nominal pipe diameter. The ends are machine tool bevelled which provides a smooth, clean surface for welding, and assures maximum accuracy as well as installation ease.

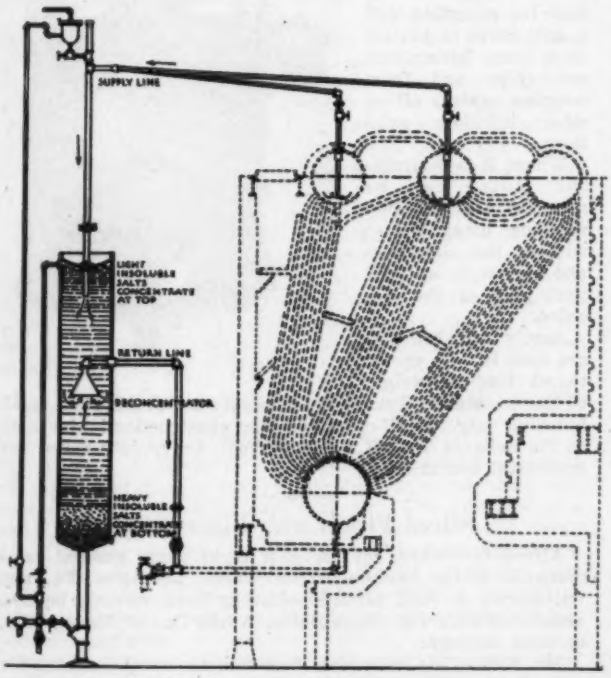
Sludge Deconcentrators Eliminate Tube Failures

Because of the hardness and relatively high alkalinity of the water used for its two 614-hp. Stirling boilers, the Miamisburg Paper Company, Miamisburg, Ohio, was compelled to take some steps to condition the boiler water during 1926. The water supply consisted of a mixture of well and river water. The well water has a hardness of 21 grains per gallon, an alkalinity of 18 g.p.g. while the total dissolved mineral content averages 25 g.p.g. The river water has a total hardness of 19 g.p.g. with 16 grains alkalinity. The alkalinity represents the temporary hardness of the water, that is, the hardness which will separate out in the form of sludge when the water reaches the boiler.

Basing average operation at a total scale forming condition of 21 g.p.g., and the plant operating 24 hours per day with return water at the very maximum of 70 per cent—though the quantity of returns will vary somewhat under 70 per cent—the total amount of scale removed approximates 24,000 lb. per boiler per year. Other suspended matter and other substances in the water which can not be classified as scale-forming substances are responsible for approximately 10,000 lb. of additional sludge per year.

As was to be expected, a number of boiler tube failures had occurred, due to leaks and bags, while turbining for scale and washouts were called for frequently. Powdered coal is used for fuel, the boilers operating at between 125 and 150 per cent of rating, so that scale and sludge are particularly objectionable.

With a view to eliminating as much of this trouble as possible, each boiler was equipped with its own individual Elgin sludge deconcentrator in 1926 and one Elgin single



Schematic hook-up of Elgin sludge deconcentrator to 614 hp. Stirling boilers, Miamisburg Paper Co.

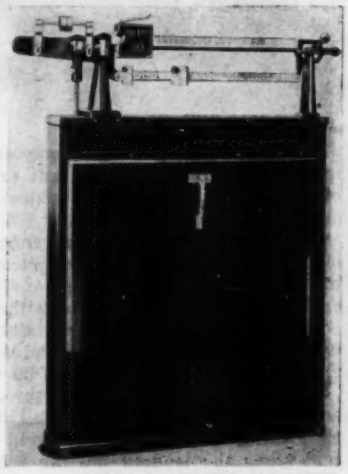
tank pressure gravity treating system for the application or chemical treatment serving both boilers. The boilers operate 24 hours per day and use approximately 30 per cent make-up water. Even so, the cost of chemical treatment is only about $1 per day—50c a day per boiler. This cost varies slightly up or down according to the variation of make-up water.

Where formerly it was necessary to open the boilers every two weeks, each boiler is now able to remain in service for one year before being opened, according to M. V. Brooks, superintendent. At each annual inspection, the tubes and drums have been found to be clean and free from scale, so that opening the boilers over a year is not really necessary. The savings in cost due to freedom from shut-downs, bulged or leaky tubes and tube replacements and the cost for turbining have paid the initial cost of installation many times over during the five years the Elgin sludge deconcentrators have been in continuous operation. Not a single tube has had to be replaced since the sludge deconcentrators went into service, in 1926.

New Convertible Automatic Scale

A new and entirely different type of beam scale embodying features of accuracy in design and construction heretofore found only in automatic scales, has recently been developed by the Toledo Scale Company, Toledo, Ohio.

This scale, known as the Toledo Convert-O-Matic, offers new and outstanding features of weight control. It has a full floating platform which stops losses caused by the inevitable wear resulting from movement of the knife edge pivots on the bearings. It is possible, at any time, to put on the Toledo automatic indicating dial with its full floating double pendulum mechanism which has no pivots or bearings. Should requirements demand an automatic scale of greater capacity, a further adaptation of the Convert-O-Matic is possible. Its total weighing capacity may be increased one to four times merely by adding unit weights in the same cabinet.



Features of the Convert-O-Matic are: Pivots may be changed without honing or grinding. Before, pivot changing was an expensive, tedious job, calling for the skill of a trained scale mechanic for a day or more. Now this can be done in an hour or two. A few pivots may be kept on hand for an emergency as they are interchangeable. Longer pivots reduce the pressure on the knife edges to one-fourth of that permitted by official engineering specifications. Three sides of the cabinet are of one piece of pressed steel, providing unusual strength and stability.

Armco Personnel Changes

Announcement is made by The American Rolling Mill Co., Middletown, Ohio of the appointment of R. C. Todd, formerly assistant general sales manager, as assistant vice-president of the company. H. M. Richards, who has been manager of the Cleveland sales district, will succeed Mr Todd.

As Cleveland district manager, the company announces the appointment of Foster E. Wortley. O. L. Conley will be assistant manager.

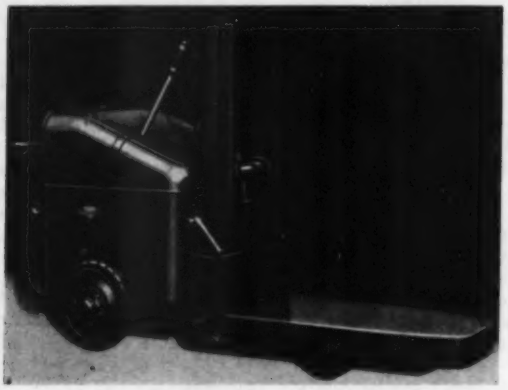
W. J. McDonough, formerly with the Kissick-Penno Co., New York City, has joined the engineering staff of Northern Equipment Co., Erie, Penna., manufacturer of Copes Feed Water Regulators and allied equipment. Mr. McDonough was affiliated with the Northern Equipment Co., several years ago.

Charles H. Bauer, for the past six years manager of the automotive division of the L. H. Gilmer Company of Philadelphia has enlarged his sphere of action to embrace the entire sale of the company's industrial and automotive products.

Tiering Truck with Four Steering Wheels

A tiering truck that steers with all four wheels, drives from the rear wheels and is powered with a tractor-type gas engine capable of 24 hours' continuous operation is announced by the Clark Tructractor Company, Battle Creek, Michigan.

The new method by which all four wheels turn in response to the steering control enables the truck to get into tight



places with its load and get away easily. The turning radius is 94 inches and the truck will easily negotiate the corner of two intersecting 64-inch aisles with ample clearance on each side.

The hydraulic lift applies maximum power to point of service without drum or other complicated mechanisms. Besides utilizing all the advantages of the hydraulic lift it also cushions the descending load without shock.

The "Tiertop" model is especially recommended for storage use, for material is quickly and compactly tiered. It tiers a three-ton load to six feet in 30 seconds.

The "Tiermor" model tiers three tons to four feet in 18 seconds and, due to its low overall height, is especially adapted to loading and unloading freight cars. It enters the car and takes the load to the far end, spots it where it is to ride, and comes out of the car with no jockeying. Its flexible mobility and the construction which permits the driver to have clear vision at all times are recited as important advantages.

Penn.-New Jersey Supers' Annual Meeting

The annual meeting of the Pennsylvania-New Jersey Division of the Superintendents' Association will be held at the Benjamin Franklin Hotel, Philadelphia, on Saturday, October 17, beginning at 9 o'clock in the morning with a business sitting, followed by the reading and discussion of papers and election of officers.

Following a luncheon at noon, Joseph H. Wallace is on the program to deliver an address on "Modernizing." Later in the afternoon a representative of the Typothetae of Philadelphia is to discuss "The Proper Qualifications of Paper for Printing." This is the first time a representative of the Printing House Craftsmen has appeared before the Penn.-New Jersey Division and the members expect to learn a lot from the discussion.

A Question Box will be conducted by Former President "Jim" Ramsey for open discussion of problems of mill work.

In the evening there will be a banquet and musical entertainment followed by an educational and inspirational address by Dr. Manly P. Northam, an industrial engineer who has previously appeared before the division and at the annual meeting of the general association.

In announcing the meeting, J. Linville Mullin, secretary-treasurer, urges the attendance and co-operation of all members who appreciate the advantages of getting together for the exchange of helpful ideas, making new friends and renewing old friendships.

Recovering Rosin from Black Liquor

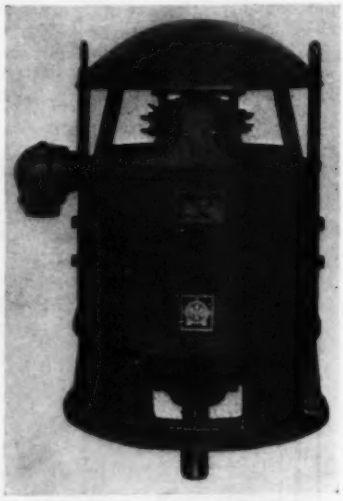
After treatment with sulphite waste liquor, the soapy compound which forms on the surface of spent kraft and soda pulp liquors separates into two layers, the upper one of which consists of resinous and fatty acids which may be treated with a volatile solvent such as benzine to recover the rosin. Efforts have been made at different times by pulp mill chemists to recover rosin in this way, the most recent of which forms the subject of a patent issued by the United States Patent Office to Carl H. Michelson, of Abo, Finland. This provides for the decomposition of the saponaceous compound of fatty and resinous acids by means of sulphite waste liquor at ordinary room temperature, the resinous acids which are liberated being extracted from the coagulated mass by a volatile solvent, such as benzine.

It was proposed at one time to make use of the rosin recovered in this way as a sizing agent but it has not hitherto been considered a commercial possibility.

In the process of treatment the sulphite waste liquor undergoes some change; it brightens up considerably and may be easily worked to recover valuable constituents.

A Direct-Current Vertical Motor

The Reliance Electric & Engineering Co., Cleveland, Ohio, have developed Type T direct-current motors for vertical operation in sizes up to 50 hp., 1150 r.p.m.



These motors are provided with a ring base for mounting and a drip cover to protect them from falling dirt and chips and from dripping water, oil or other injurious solutions.

Where it is desirable the motor can be mounted direct to the machine being driven without the ring base and appear as an integral part of the machine.

Amply large bearings are used to take up the thrust load or weight of the armature. Two heavy eye-bolts are provided to make handling easy. In all other ways the construction is the same as the Reliance Type T, direct-current, heavy-duty motor for horizontal operation.

Alfred Fickes with Biggs Boiler

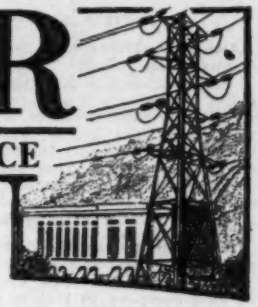
Alfred C. Fickes, for the past eight years general sales manager of the Lancaster Iron Works, Lancaster, Pa., and well-known in steel plate fabricating lines, recently became associated with The Biggs Boiler Works Co., of Akron, Ohio, as sales manager.

Mr. Fickes has been identified with the steel industry for many years, as a mechanical and structural engineer.

Hurlbut Paper Company, South Lee, Mass., has sent to a selected list of dealers a remarkably choice selection of the types of rag papers manufactured by the firm. These consist of fine book papers, fourside deckle edge paper, index bristols, ledger papers, drawing papers, extra superfine writing, etching papers and several specialties of remarkable attractiveness as regards appearance, finish and durability. It is quite evident that the Hurlbut Paper Company is taking a coveted position among fine paper manufacturers in the New England district as their product reflects the highest credit as choice paper productions.

POWER

GENERATION - UTILIZATION - MAINTENANCE



By W. S. JOULE

This section turns the searchlight upon power and its allied problems. It shows up big possibilities to save. Opportunities to improve conditions, methods, apparatus will be discovered. Worth while practices suggest new ideas and wider usages of equipment.

Simple Home-Made Rain Gauge

RAINFALL is of very great importance where plants depend upon their own private water supply, for hydro-electric plants and for water works. The significance of rainfall has assumed greater importance during the last two years, due to the draught in many sections of the country, a very real shortage of water existing in many parts of the country. Consequently, records of rainfall have received greater attention by individual users of water as well as by the Government.

A rain gauge which costs practically nothing to make was described by E. J. Lewis, superintendent of water works, Bellaire, Ohio, at the tenth annual report of the Ohio Conference on Water Purification. While the cost is practically nothing, the gauge will give reasonably accurate and valuable rainfall records. The gauge is made in this way:

A copper tank measuring exacty 15.2 inches square and several inches deep should be built. A tank of this size, inside dimensions, corresponds to one gallon of water at a depth of one inch, namely 231 cubic inches. The bottom of this copper tank should be equipped with a drain or cock which, in turn, is connected to a vessel through a tube in such a way that no rainfall can enter the vessel except through the copper tank. The vessel or bottle should have a capacity of about two gallons.

The bottle or vessel should be graduated by placing measured quantities of water in it, marking the quantities off in decimal fractions of a gallon which represent an equivalent depth in fractions of an inch of rain. This vessel, in turn, should be equipped with a drain so that all contents may be drained off. A rainfall gauge in this way is sufficiently accurate for all purposes and can be built from the material usually lying around a plant.

Precaution When Working Around Pulverized Coal Equipment

THE use of powdered coal necessarily implies a certain amount of danger from explosion due to the small coal forming an explosive mixture with air. The presence of a flame—as caused by static, a spark from some hard object when striking another hard object will cause an explosion when the mixture of coal dust and air is the proper ratio for an explosion. Therefore, every precaution should be taken to prevent sparks or live flame coming into contact with the coal dust.

Statistics as to the number of accidents that have resulted from explosion are not readily available. That the hazard is a very real one has been recognized for a long time, however. In fact, the situation assumed such importance that the Bureau of Mines issued a very interesting bulletin upon the subject of the hazards of powdered coal. This may be obtained from the Bureau of Mines, Washington, D. C.

Considerable has been written in regard to the dangers of powdered coal which are, however, about as explosive as powdered aluminum, flour, grain, grain dust, etc. There is another real hazard which is very rarely mentioned. In fact, it is all the more real because ordinarily it is not suspected nor is it guarded against. That danger is due to asphyxiation, to carbon monoxide gas. Men have lost their lives in powdered coal burning plants from carbon monoxide gas poisoning. It is only safe practice, therefore, to suspect the presence of this gas (extremely poisonous, yet odorless) in storage bins and other closed places. After all, it is only natural that gas should be present, since the coal is dried (which means heated) and then powdered. The temperature of the atmosphere surrounding it is quite high and may be such as to give off gas. Coal held in storage bins under heat may be expected to give off this poisonous gas. Men sent into adjacent bins or these bins to clean them out and wipe off all surfaces so as to minimize the possibility of explosions become subject to whatever carbon monoxide gas is present.

Where men are to do cleaning, repairing, and general overhauling in storage bins for powdered coal, etc., special precautions should be taken to see that all those spaces are thoroughly ventilated before the men enter. Probably the use of a blower and air line offers the easiest way to do this. Adequate ventilation should be maintained so long as the men are at work, if necessary by the use of a forced draft blower. Self-contained oxygen-breathing apparatus or a hose-mask should be supplied to each worker where adequate ventilation cannot be maintained, as is often done in oil tankers. A further precaution would be to tie a rope around each man's waist or beneath the arm pits so that if necessary he can be pulled out in case of unconsciousness. At least one man should be kept outside the bins to watch the workers and render help if required.

In this connection it might be well to stress the fact that gas masks such as were used during the war are absolutely worthless in protecting against carbon monoxide gas—which is colorless and odorless and gives no warning of its presence.

It is good advice, therefore, to treat all powdered coal installations as dangerous. Every precaution should be taken against carbon monoxide gas as well as against explosion. These precautions involve not only equipment but personnel. The price of safety is eternal watchfulness.

Cutting Large Clinker Masses

WHEN clinker crusts and masses build up to the full width of the furnace, the mass becomes too unwieldy to handle unless broken up. This may be a difficult job, although when done properly it becomes a simple, safe and not unpleasant task. Moreover, the clinker can be broken up without discomfort or danger to the fireman and without disturbing the fuel bed.

A hand lance of sufficient length to pass the full width or length of the furnace should be constructed. This lance should be of ½ or ¾ inch iron pipe, open at one end, while the other end should be connected to the steam supply. To cut clinker, the lance should be inserted into the furnace through one of the side doors or where most convenient. Steam should then be turned while moving the open or nozzle end over the lump of clinker where it is desired to separate or cut it. The steam will quickly cut the clinker, parting it along the path taken by the steam.

In inspecting a boiler after being laid up, care should be taken not to use a naked flame as there is always a possibility of an explosive mixture existing within the furnace. In using a portable electric lamp remember the boiler and metal make a good "ground" and electric shock often proves fatal.

New Catalogues and Publications

Alexander Brothers, Philadelphia, Pa.—A circular issued by this company features its Tentacular transmission belt which consists of single or double ply leather, balata or rubber backing, to the pulley side of which are attached narrow strips lengthwise of very soft pliable plastic leather. These strips are riveted to the backing with Tentacular hollow rivets strongly clinched thus forming a depression in the soft leather strips. The construction of this belt eliminates slipping. This belt has been tested and is being used for a number of paper mill drives. The company's leather link belting, designed for special drives, has also been successfully used for winder drives on paper machines.

American Blower Corp., Detroit, Mich.—New Bulletin No. A-718 superseding No. 9218 on The Venturafin Method of Heating has just been received. The Venturafin method which was introduced by this company in 1924 is a steam heating system applicable to a great variety of rooms and buildings, and combines the features of both direct radiation and central fan systems. The principle of the system and the construction of the Venturafin Unit Heater are clearly explained in this bulletin. There are illustrations, diagrams and engineering data valuable to those interested in the design and installation of Venturafin Heating Systems.

American Rolling Mill Co., Middletown, O.—Engineering bulletin 4 of this company supplies interesting information on the coatings of Armco spiral welded pipe, their selection, probable life, and other data. Copies on request.

American Wringer Co., Woonsocket, R. I.—Tensilastic, an industrial rubber compound which has been developed scientifically in this company's laboratories is the subject of a recent new booklet. This booklet tells in detail the history of Tensilastic development and its many advantages to paper mill operators. There are graphs showing its tensile strength, ageing qualities and density control. Other publications entitled "Density and Care of Press Rolls" and "The Use and Abuse of Rubber Covered Rolls" are available upon request.

Babcock & Wilcox Co., New York—Recent literature issued by this company includes a new bulletin entitled "Modern Steam" outlines the evolution of marine steam propulsion from low pressure plants to the present economical use of modern steam. The booklet is written in non-technical style and is profusely illustrated with photos of modern marine installations. Another booklet describes a line of chain grate stokers and the subject of another is "Return Bend Economizers." Copies upon request.

Black-Clawson Company, Hamilton, Ohio—For the August number of "The Messenger" this company has issued a 36-page booklet as a reprint of a series of articles by Joseph H. Wallace, recounting the experiences of an oldtimer in the paper industry. This series was recently published in **The Paper Trade Journal** and the Black-Clawson Co. presents the complete story with the hope that some of its readers will tell them of similar experiences for publication in subsequent issues of its magazine.

Brown Instrument Co., Philadelphia—A new broadside brings out a point of general interest—the fact that without departmentalizing steam accounting, serious losses many occur in almost any plant using process steam, without the management being aware of the loss. The broadside also shows that unless steam consumed by different departments is individually recorded and compared, comparative efficiency in the use of steam in one department may go unnoticed.

Carlisle Johnson Machine Co., Manchester, Conn.—A new catalogue just out features the improvements and advantages of this company's new Super-Johnson clutch. In this new type of clutch, the expanding friction ring is faced on its outside diameter with a special heat resisting material. Copies on request.

DeLaval Steam Turbine Co., Trenton, N. J.—DeLaval single stage, double suction centrifugal pumps are described and illustrated in a new catalogue B-2 just issued. This type of pump was introduced by this company in 1901. Besides descriptive matter, the bulletin is well illustrated with views of the complete pump and its parts, also a cross sectional view in colors.

Diamond Rubber Co., Akron, O.—A new edition of this company's mechanical catalogue is now ready for distribution. Some new cuts have been incorporated, and new items such as Defiance car washing hose, rotary drillers hose, and X-70 packing, have been included.

Earle Gear and Machine Co., Philadelphia—Catalogue No. 31, contains complete information and photographs of Earle gears and machinery. There are also tables, engineering data and formulae which should be of interest to all gear users. Copies on request.

Farrel-Birmingham Co., Ansonia, Conn.—A booklet of particular interest to the paper industry is entitled "Improved Finish on Calender Rolls." Points are listed for attaining precision and high quality of finish in roll grinding.

Foote Bros. Gear & Machine Co., Chicago—IXL Hygrade Worm Gear Speed Reducers is the subject of a new catalogue. The opening chapter on the evolution of worm gearing is well illustrated and brings out the application of experience and research to the development of this reducer. Another interesting section is called The Customer's Problem, which contains valuable information for prospective users. Complete information covering the reducer, ratios, ratings, graphs, engineering data and dimensions for all types and sizes is given. A similar catalogue features the IXL Titan Anti-Friction Bearing Speed Reducers, offered by this company. Copies on request.

Ludlow Valve Mfg. Co., Troy, N. Y.—Bulletin No. 101 gives a condensed but complete description of the Ludlow Multi-Valve, a valve so designed, the manufacturers claim, that a tight closure is provided at all pressures and temperatures—for steam, air, gas, water, oil, viscous liquids and solutions—that will give a smooth throttling action without erosion, defeat the action of scale and virtually renew its seat automatically. If necessary, this valve can be modified to meet special conditions.

Merco-Nordstrom Co., San Francisco, Calif.—A 172-page catalogue, illustrating approximately 30 types of Nordstrom lubricated plug cock valves, has just been issued by this company. The catalogue lists various types of valves made in different metals for handling different liquids, semi-liquids and gases, both neutral and acid. Also steam jacketed valves, remote control valves and types with multi-ports, both in low and high pressure. Valves manufactured of bronze, aluminum and Mercalloy for handling corrosion—resistant liquids are also shown, and the catalogue is illustrated with actual installations in approximately 20 industries.

Morse Chain Co., Ithaca, New York—A very attractive publication is this company's new bulletin No. 47, a 24-page booklet nicely printed on enamel paper, each page silver trimmed. The subject of this bulletin is Flexible Couplings by Morse, and the text takes up the selection of Morse couplings for use in various industries. There are curves, diagrammatic figures and tables of data, all of exceptional interest. The book is profusely illustrated and well bound.

J. E. Rhoads & Sons, Philadelphia, Pa.—The ninth edition of Rhoads Belt User's Book is just off the press. This is a careful revision of the 1929 edition. The specific suggestions, rules, tables and charts that have made previous editions helpful to the belt man have been retained. Brief write-ups on short center drives and group and individual drives are part of the new matter. Copies on request.

Rossler & Hasslacher Chemical Co., Inc., New York—A new publication introduces Trichlorethylene, commercially known as Tri. This is a colorless, non-flammable, stable liquid with a boiling point of 87.6 deg. C. (188 deg. F.) and a density of 1.4762 at 15/4 C. Even in the presence of water at elevated temperatures it does not attack common metals of construction. Its physiological action is milder than that of gasoline and chloroform, according to available data. Tri has many uses, such as being suited as a general solvent for oils, fats, waxes; for the extraction of edible and inedible oils; the degreasing of metals, leathers, and textiles. As a base solvent it is used in the preparation of soaps, and many special cleaning preparations.

Schutte and Koerting Co., Philadelphia—Descriptive circulars have just been published covering two new SK lines, one featuring Rotameters for Liquids and Gases and the other, Polyplate Heat Exchangers. The SK Rotameter is a simple measuring device which indicates at any time the rate of flow in the pipe line in which it is installed. It is suitable for gases or liquids and gives direct readings in cubic feet, pounds, gallons, barrels or other units per hour or per minute. The SK Polyplate Heat Exchanger is a surface type heat transfer apparatus handling water, oils and other liquids as well as steam, air and gases.

Sullivan Machinery Co., Chicago—Sullivan Scraper Mucking Hoists which are available in electric, turbinair and gasoline types are featured in Bulletin 76-N, which will be sent upon request. The advantages claimed for this scraper mucking hoist are low power consumption, adaptability to conditions, ruggedness and reliability, simplicity, power and speed, lubrication and interchangeability. The bulletin is well illustrated and contains much valuable data.

NEW BOOKS

The Preparation of Wholestuffs—A most noteworthy edition to the literature of papermaking is a book just published in the German language from the press of Otto Elsner Verlagsgesellschaft m.b.H., Berlin. It bears the title "Die Bereitung des Papierganzstoffes," which may be rendered in English as "The Preparation of Wholestuffs." The volume is one of large size, measuring 8 by 11 inches. Its pages number 464, and it is illustrated with 283 reproductions of photographs of machinery, besides numerous line drawings in scale and elevation of equipment, as well as photomicrographs of fibers. The author of the book, which is Part 2 of Volume I of "Technik und Praxis der Papierfabrikation," a series of volumes on the theory and practice of papermaking issued under the direction of Dr. Emil Heuser, of Hawkesbury, Ont., and Dr. Erich Opfermann, of Berlin, is Dr. Hellmuth Schwalbe, technical director of the Dill and Collins Paper Company, Philadelphia, a son of the renowned Prof. Dr. Carl G. Schwalbe, of Eberswalde, Germany. An enumeration of the chapter headings will convey an idea of the scope of the work. There are six chapters, as follows:

1—The Recovery of Old Paper and Waste.
2—The Construction of Beaters.
3—The Refining of Wholestuff (Jordaning, etc.)
4—The Sizing of Paper.
5—Paper Fillers.
6—The Dyeing of Paper and the Dyestuffs Used.

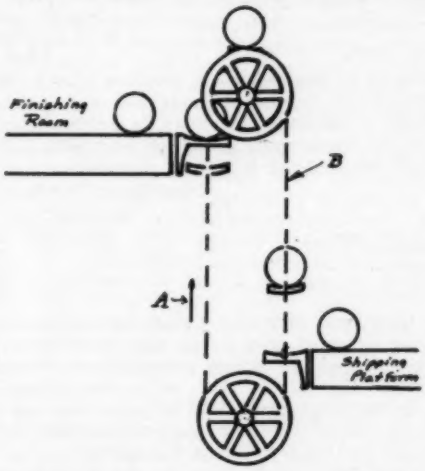
Doctor Schwalbe is to be heartily felicitated on the outcome of his years of labor in the prapartion of this volume. He acknowledges his indebtedness to many friends in the industry for assistance in the collation of material from their private archives. The work is of great practical value, while based on sound scientific principles. The price of the book is 28 Reichmarks.

Practical Helps for the Mill Man

Roll Conveyor

A DIFFERENCE in level between paper machine room and finishing room, or between finishing room and shipping shed is often necessitated by the ground on which a mill is built or by other considerations. Elevators are expensive to maintain, are often productive of accidents and require someone to run them. The device shown in diagrammatic way in the sketch is used in one mill to convey the rolls from the finishing room to the shipping platform.

In this case the shipping platform is below the finishing room. The device consists of a series of cradles carried on



heavy conveyor chains. These chains pass over large cog wheels—one on each floor. One of these is driven by a light motor. The cradle is forklike in construction with six tines. On each platform is another forklike cradle and the tines of the moving cradles pass between the forks of the stationary ones. The roll on the finishing floor is rolled onto the stationary cradle there by the last man of the finishing gang. The next moving cradle on the conveyor picks it up, and carries it up, and to the other side of the cog wheel, and then down to the stationary fork on the shipping platform. This stationary fork may be tilted slightly so that the roll will roll off, or the first man on the shipping platform can roll it off. The conveyor runs continually and carries the rolls away as fast as they are finished.

Direction of Wrapping Corduroy Cloth on Cylinder Mold

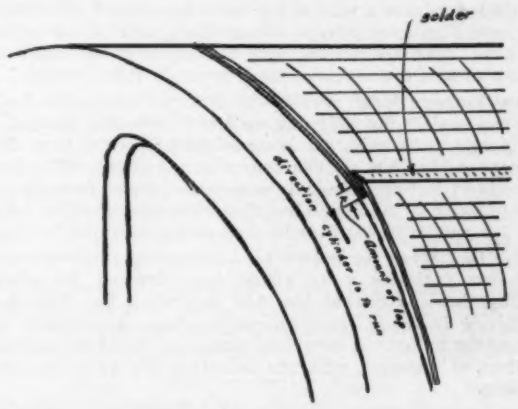
THE question sometimes arises in which direction a piece of corduroy cloth should be wrapped around the cylinder mold. It will be noted that corduroy cloth has a very few wires in one direction and a good many in the other. For instance, one very useful mesh of corduroy cloth is called "12 x 64." That is to say there are 12 wires to the inch in one direction and 64 in the other. In the case of the 64 wires, they are so set and of such diameter as to touch each other. However, the great distance between each two of the 12 wires provide wedge shaped holes through which the water or filtrate escapes, while the touching wires running the other way make it almost impossible for the fibers to escape. When the fewer number of wires are placed running around the cylinder mold, this action has the most opportunity to take place. So in 12 x 64 corduroy, the 12 to the inch wires should run around the mold, and the 64 to the inch wires parallel to the shaft.

Corduroy Cloth Seam

THE seam used in putting on a corduroy cloth cylinder facing is made with solder because the distance between the wires which run around the cylinder mold are so far apart that there is little support for a sewing. However, there exists some lack of understanding as to how much the cloth should lap in order to make the seam and in connection with other details.

The sketch shows some of the details of the seam. It will be noted that the end of the cloth pointing in the direction in which the cylinder mold is to run is placed under the other end. This is so that if there is a couch roll running on the facing, it will not bang against the joint when this comes around, but will slip down from the upper layer of cloth to the lower.

The necessary amount of lap is not very great. One-quarter inch or three-eighths is enough. Muriatic acid is used for a



cleaner. The edges of the cloth should certainly be cleaned, because an oil is used in weaving which sometimes adheres to the cloth when it is delivered to the paper or pulp mill. Muriatic acid in which all the pure lead it will take has been dissolved is used for a flux. The seam is made by running the solder very thoroughly into the spaces between the strands of wire making up the cloth and so down into the layer below. The difference in level between the two layers of cloth is made up by solder tapered off from the upper to the lower, and this eases the jar of the couch roll going over this point on the facing. The solder used is made of half lead and half tin.

Manufacture of Paper

STRAW, bamboo, or similar cellulosic material is steeped for about half an hour in a large excess of one to six per cent solution of sodium hydroxide at about 90 degrees C. The mass is then squeezed until it contains three to four parts of liquor per one part of raw material and digested without further addition of treating liquor, for half an hour at 170 to 190 degrees C. The digester is heated by direct steam and the time taken to reach the cooking temperature should be about 30 minutes. The resulting pulp is washed and chlorinated. The process is continuous. A suitable apparatus is described. British Patent No. 347,096, filed December 7, 1929.

The Month at Washington

CONFERENCE on Trade Barriers—Inter-American trade barriers and means for their elimination received the attention of the Fourth Pan American Commercial Conference which met in Washington, October 5 under the auspices of the Pan American Union, at which practically every American Republic was represented by both government officials and delegates of private business organizations. Trade promotion by general or specific economic agreements similar to those already existing between certain American republics, development of closer relations between American chambers of commerce, and standardization of commodities and trade term definitions also received attention, while the major economic problems now confronting the nations of the American continent were the subject of frank discussion from which practical solutions may shortly be expected.

Cashing in on Russian Trading—American manufacturers are advised to insist on cash in Russian trading because the acceptance of commercial paper means backing Soviet business with U. S. capital, says the Bureau of Foreign and Domestic Commerce. Russia well understands how to take advantage of economic depression by playing a firm in one country against those in another in order to beat down prices and obtain larger credit for future orders, it is stated. Russia has made business a part of her government and when American manufacturers accept orders for goods to be shipped to Russia, they are dealing with the Soviet government even though orders are received from firms in this country.

New Postage Meter Device—A new postage meter device, with mechanism for weighing mail and recording the amount of postage to be paid, has been submitted to the Post Office Department by Wm. J. Pearson of Los Angeles. The device is designed to be particularly adaptable for use in connection with parcel post mail, and has the advantage of being adaptable for use in post offices as well as by users of the mails.

Five Day Week for Industry—A survey by the Department of Labor indicates more plants are adopting the shorter working basis and that the five day week for industry is increasing in favor, more and more plants adopting it as a permanent policy. A complete statistical table is shown for all lines of business, with the following line up in the paper industry:

Business	Number of Establishments	Number of Employees
Paper boxes	19	1,413
Paper and pulp	3	763
Printing, book and job	21	3,296

Ratio of Males in Employment Drops—The ratio of males in employment dropped in the last decade, with the proportion of gainfully employed females over ten years standing steadily higher, the Census Bureau reveals. The percentage of men gainfully employed declined from 78.2 in 1920 to 76.2 in 1930, while the percentage of women increased from 21.1 to 22.1.

Commerce Yearbook Reviews Depression—The year 1930, with its record of declining trade, prices and production as a part of the general economic depression, developed a definite trend in the country's banking structure to fewer, but larger banking institutions, says the new volume "The Commerce Yearbook for 1931," just off the press. Attention is called to the increasing efficiency of labor and management in most lines of commerce and industry.

The Price Situation—Prices seem to have fallen to the lowest point and commodity levels will drop no farther, the Labor Bureau believes, with a visible rise in August and some wholesale and retail increases being shown since that time. Belief that prices have struck bottom gives rise to the thought that we will shortly pull out of the depression, with the downward movement of prices brought to a halt.

Stabilization of the industrial commodity price curve in recent weeks for the first time since the beginning of the depression, is also cited by Dr. Julius Klein as an indication of the basic confidence of the people in an upward buying movement. When big purchasing organizations become aware of this stabilization they may be expected to start purchasing stocks and anticipating an upward buying trend on the part of the public.

Wholesale Prices—The downward movement of wholesale prices which was halted in July and took a slight upward trend in August, continued with slight improvement in September, as shown in the index numbers computed by the Bureau of Labor Statistics. With 1926 as the basis of 100 we find the following changes: for paper and pulp:

Sept. 1930	August 1931	Sept. 1931	Purchasing power of the dollar in August, 1931
83.8	80.1	80.1	1.248

Employment in September—A decrease of 0.3 per cent in employment from August to September and a decrease of 1.1 per cent in earnings, is shown in another computation relative to the employment situation and with 1926 as the basis of 100 we find the following changes:

	Employment			Pay-roll Totals		
	1930	1931		1930	1931	
	Sept.	Aug.	Sept.	Sept.	Aug.	Sept.
Paper and printing	96.9	89.5	89.2	99.0	86.8	86.3
Paper and pulp	90.0	81.1	81.2	86.3	68.1	69.5
Paper boxes	89.0	80.1	81.1	90.7	76.9	78.0
Printing, book and job	98.3	88.1	88.4	100.5	85.2	85.0
Printing, newspapers	106.5	104.5	102.6	109.0	104.8	102.2

Credit Conditions Reported Satisfactory—Current obligations in the form of open credit and installment accounts continued to be paid in orderly manner during the January-June period of the current year, while new obligations were assumed in the same proportion to cash sales as formerly, according to the third semi-annual retail credit survey just published by the Department of Commerce.

Another publication issued by the Census Bureau, "U. S. Summary of Retail Distribution" covering the 1930 census, shows direct sales to consumers through non-retail channels, number of stores per capita and sales per store, local, sectional and national chains, etc., with a summary of retail sales by states and geographic divisions.

A wholesale trade summary of the United States has also been issued, showing maps of concentration of wholesalers by counties, volume of trade by states, etc.

Interstate Commerce Rulings—Rates on paperboard, in carloads, from West Point, Va., to certain eastern destinations, were found not unreasonable in a recent decision of the Interstate Commerce Commission (No. 23482), and the complaint was dismissed.

Rates on waste paper, in carloads, from Boston, N. Y., Phila., Babbitt, N. J., and points taking the same or related rates, to Carthage and Watertown, N. Y., were found not unlawful in another decision (Carthage Pulp & Board Co., vs. Pa. R. R., No. 23099), and the complaints were dismissed.

On reargument in International Paper Co. vs. B. & O., No. 20409, findings in prior reports as to rates on imported china clay and ball clay, in carloads, from north Atlantic ports to destinations in the States of New Jersey, New York and in New England were modified, and a reasonable basis of rates was prescribed for the future, with reparation awarded.

Proposed rates on paper stock, in carloads, between points in southern territory and between points in southern territory and official classification territory, Illinois, Wisconsin, and Michigan were found justified in another decision, excepting certain schedules which were required to be cancelled (I & S Docket No. 3480).

ADVERTISING PAGES REMOVED

Sound Credit Policy for Successful Exporting—The desirability of American exporters adhering to a sound credit policy in connection with their foreign customers is emphasized in a trade bulletin just issued by the Department of Commerce, one that is sufficiently flexible to meet individual cases without being inconstant, and competition with trade rivals on credit terms is rarely, if ever, justified.

Modified Customs Regulations—Substantial savings to newspaper publishing companies would accrue if existing newsprint paper classifications established in the Federal customs regulations were modified, representatives of domestic users of imported newsprint declared at a hearing before officials of the Customs Bureau recently. Seeking to amend these classifications so as to decrease the limit on width and increase the present specifications relating to thickness, counsel for the American Newspaper Publishers Associations, also criticized methods employed by customs collectors in inspecting shipments of newsprint. Present newsprint classifications limit the minimum width of this commodity to 16 inches if it is to be admitted duty free, and it was recommended that a limit of 15 inches in width be placed, the narrower measure paper being employed particularly in the printing of comic sections and magazine sections.

Book Papers—Based upon a classification system previously devised for record papers, and on test results obtained for book papers, a suggested classification of papers for use in publications has been formulated by the Bureau of Standards which details the properties considered desirable in papers for all types of printed records, permanent to temporary..

The Bureau has recently completed a study of the relation of the test values obtained with the M.I.T. folding tester and Schopper folding-tester, but so far has not been able to find a means of interconversion. Tests with both types of instruments were made of 12 papers representative of the various grades of writing, book and wrapping papers, and of the usual range of folding endurance found in paper. The M.I.T. values were always lower than the Schopper, but there was no regular relation. The variable nature of folding values makes an accurate comparison of this kind difficult, but further study to find if a definite relation exists is being made.

In a study at the Bureau of the aging qualities of paper towels, the chief deteriorative effect found by tests of stored towels was loss of absorptiveness. Study of an accelerated aging test made by heating the towels showed that their retention of absorptive quality during storage could be predicted quite accurately by this means.

Tests for strength and stability have been made on a series of 18 papers consisting of surface sized papers and the basic unsized papers corresponding to them made from bond sulphite fibers in the bureau paper mill. Marked increase in bursting strength, tensile strength and elongation at rupture resulted from sizing with glue or starch. A corresponding decrease in tearing strength occurred. There was no marked increase in the folding endurance on surface sizing, but in eight cases out of nine the uniformity of the papers, in respect to the folding endurance in the two directions, was noticeably improved on surface sizing. An accelerated aging test made by heating the papers indicates a slight improvement in stability on sizing with glue, but none of sizing with starch.

Announcement is made that a general conference of producers, distributors and users of binders board will be held October 14, 1931 at 10:00 a. m., in the Murray Hill hotel, New York City, to consider the adoption of a proposed commercial standard for this commodity. All those interested are urged to be present in order that the standard as finally adopted may be acceptable to all directly concerned. If personal attendance is impossible, it is requested that suggestions or written comment be sent to the meeting.

John A. Murray, associated with William A. Hardy & Sons Co. of Fitchburg, Mass., as salesman for the past 24 years, passed away at his home in Merrimac, N. H., on Sunday, September 27, aged 64.

❖ PACIFIC COAST ❖

WASHINGTON

The first forest ranger training camp for the national forests of Oregon and Washington opened at the Hemlock ranger station in the Wind River valley of southern Washington, October 1, attended by 32 rangers from 19 different national forests in the two states, and will continue through the entire month, according to C. J. Buck, regional forester. The course will include training in how to estimate timber, prepare government sale papers, lay trails and telephone lines and towers, and how to organize crews for fire fighting. The men will be housed in camps but the forest will be the the class-room. The respective forest supervisors in the will take turns with instruction.

The Pacific Waxed Paper Co. of Tacoma, moved its factory to Seattle this month, where a new building with 25,000 feet of floor space has been provided at Atlantic St. and Sixth Ave. South. Representatives of the company will cover Oregon, Washington and Idaho territory from the new office, while other branches are located in San Francisco, Los Angeles and Honolulu.

Charles C. Smoot, investigator for the bureau of chemistry and soil, Washington, D. C., United States Department of Agriculture, is in the Pacific northwest for a study of tannin and other by-products of hemlock bark. Western pulp manufacturers and eastern tannin interests are responsible for the research now in progress starting in the vicinity of Hoquiam.

G. S. Brazeau, formerly of Cloquet, Minn., will represent the pulp division of the Weyerhauser Timber Company, Longview, in the middle west territory and will open an office at 307 N. Michigan Ave., Chicago. Henry F. Bigelow, Jr., for the past ten years associated with Atterbury Bros., Inc., New York, will handle the Weyerhauser sulphite products in the eastern district, with offices at Clinton, Mass.

Ossian Anderson, president of the Puget Sound Pulp & Timber Co., Everett, Wash., has been appointed to membership on the Central Research committee of the American Pulp and Paper Association.

Paper Company Sues to Recover Funds

Attorney Thomas MacMahin of Tacoma, on behalf of the Willapa Pulp & Paper Company, filed suit September 22 in superior court in Seattle against the American Employers' Insurance Company of Boston, to recover $50,000 on two surety bonds carried by John F. Telander, ex-president of the paper company, and Newton Charles Weaver, ex-secretary.

The complaint sets forth that the two officials drew $100,000 of the funds of the Willapa Pulp & Paper Company from a bank in Portland in 1930 and disbursed it, and that they also abstracted bonds in an amount undetermined. An additional charge is that $3,000 received from the Star Iron & Steel Works of Tacoma, had been misapplied by those handling the money.

The Olympic Forest Products Co., Port Angeles, has awarded a contract to the Seattle office of the Austin company for a new pulp storage building costing $25,000, one story, 66 by 240 feet in dimensions.

Ralph B. Hansen, technical director of the pulp division of the Weyerhauser Timber Co., Longview, a graduate of the University of Washington, and with previous pulp mill connections in this state, is a new member of Tappi. Another new member of Tappi from this state is Herman O. Meyers,

Get in on this money-making modernization movement—as CHAMPION has done

Timkenize to increase output and cut costs—consult the builder of your mills

A great modernization program is under way in the paper industry—a definite move to reduce paper manufacturing costs without lowering quality.

Forward-looking paper manufacturers have found that by taking the drag of friction out of their paper making machines, fourdriniers, calenders and other equipment, they can speed up production and cut down production costs at the same time.

They are doing this by replacing plain sleeve bearings with Timken Roller Bearings in super-calender rolls, machine calender rolls, press rolls, felt rolls, couch rolls, wire rolls and other friction-ridden points.

The Champion Coated Paper Company has increased super-calender output 35 to 40% through Timkens' capacity to accelerate operating speeds without causing excessive tearing of paper. Estimated power economies range from 40 to 50%.

The cost of changing your machines over from plain bearings to Timkens would be small considered in relation to the benefits received, as outlined above.

On top of that, you could expect the return of your investment in full in from 2 to 3 years.

Future profits must come largely from savings. Begin to save now with Timkens. Consult the builder of your machines. The Timken Roller Bearing Company, Canton, Ohio.

TIMKEN
Tapered
ROLLER BEARINGS

superintendent of the plant of Fibre Board Products, Inc., Sumner, for 19 years. Previous to that he was with the mill of the Paraffine Co. at Antioch.

Henry E. Oslenson, superintendent of the Crown Willamette Paper Co., Camas, will spend three weeks in the East this month visiting paper mills and getting late news on paper manufacturing. Elmer Emigh, who recently resigned as superintendent of the St. Helens Pulp & Paper Company's plant at St. Helens to accept a position as assistant in the Camas mill of Crown-Willamette Paper Company, will be in charge during Mr. Oslenson's absence.

The Rainier Pulp & Paper Co. is now using the pulp warehouse for baling work instead of the end of the machine room as formerly, the new arrangement offering greater efficiency of operation.

OREGON

Pasteboard containers for packing pears in the Rogue river district of southern Oregon have found favor with the growers and shippers who in many cases have signified their intention of using these in preference to the former wooden containers as they make a more pleasing package for displays. If tests this year prove satisfactory it is expected that a wide market may be developed in the paper cardboard containers by next year.

George Thorssen is now with the Sitka Spruce Pulp & Paper Co. at Empire, as superintendent. His former connection was with the Spaulding Pulp & Paper Company at Newberg.

The Hawley Pulp & Paper Co., Oregon City, has completed installation of a 42-inch paper towel machine manufactured by the Paper Converting Machine Co. of Green Bay, Wis., and will go into production on an extensive scale of paper towels. The new machine has a capacity of 25 cases of towels per hour, cut and folded, either small or large. Paper napkins in various sizes, creped or plain, will also be among the new lines marketed through the west coast distributing headquarters of the Hawley Company, under their own trademarked brands.

Dr. Hicks Makes Paper Tests

Dr. J. F. G. Hicks who has been active in the scientific tests made by the national Bureau of Standards and the Carnegie foundation to determine climatic effects on permanency of paper, is now professor of chemistry in the Oregon Institute of Technology, Portland. Paper from 60 sections of the country was examined, and the Pacific coast had three cities designated as having the best in the entire United States, according to a recent statement of Dr. Hicks. Portland and Seattle were the other two cities mentioned as favorable in the test.

Although it is conceded that the contents of the paper itself, the material used in manufacture, is a main factor in its deterioration, there is nevertheless considerable importance attached to conditions of temperature and humidity.

Dr. Hicks states that both newsprint and book papers were included in tests through a collection of 800 books, magazines and newspapers, some duplicated in from two to seven libraries, thus giving a rather accurate cross section of the comparative state of preservation. Examination was made by the eye, by microscope and by chemicals.

The research committee recognizes that other influences are also responsible for the difference in permanency on the east and west coast, these influences being kind of fuel used for heating and the wood used for making the paper.

Following the ruling of Judge Graham of the Patent Appeals court that the name "Fir-Tex" should be discontinued because it so closely resembles other names for products similar to that made by the Fir-Tex Insulating Board Company, St. Helens, it is rumored that either another name may be adopted or that the $2,000,000 plant of the company at St. Helens will be taken over by some other building board company. Reports are persistent that at least one other concern is interested in acquiring the mill.

Lester W. David who has been active in the paper industry in the northwest in the past, but who recently spent sometime in the east, is reported to be again interested in a pulp and paper project in this region, as he is now living in Portland. His name is connected with rumors of a kraft mill for the industrial district of Portland, although as yet he has not made any personal statement in this regard.

E. R. Brown, safety director for the Crown Willamette Paper Company for the past 14 years, with offices in Portland, and editor of the house organ, "Making Paper," until January of this year, has been appointed general manager of the Columbia Basin division of the National Safety Council, which includes all of the Oregon district and that part of Washington bordering the Columbia river. Mr. Brown's record in safety work resulted in his being appointed several months ago as president of the Oregon Industrial Safety Congress, in which capacity he had already been working with pulp and paper interests for better safety measures.

Bingham Pump on 24-Hour Basis

The Bingham Pump Co., Portland, Oregon, has been operating with two shifts, but on October 1 increased its operation to three shifts and will work its plant in Portland 24 hours a day until the first of the year at least. This has been necessitated by the receipt of large orders.

The Bingham Company supplied the pumping equipment for the new Weyerhaeuser pulp mill at Longview, Wash., and has received orders from a number of large paper mills. R. V. Bingham, president, announced that the company's business had increased 100 per cent over that of last year.

CALIFORNIA

The Reliance Paper Mills, 934 Santee street, Los Angeles, formed recently by J. J. Bayer and H. A. Pollock, will manufacture and distribute paper products.

The Zellerbach Paper company, San Francisco, has organized a new department for the promotion of Tulip drinking cups, manufactured by the Lily Tulip corporation of New York, Nestrite containers and other similar products for use by food distributors. Major Joseph Florsheim is in charge of the new division and announces that he will make a close study of manufactured foods with a view to increasing the market for paper containers.

Professor H. H. Corbin, recently a member of the faculty of New Zealand University, and active in British Empire Foresters, is to spend sometime on the Pacific coast in study of the pulp and paper situation and forestry for Timberlands Woodpulp, Ltd., a New Zealand organization interested in the highest development of timber resources, which is now being directed by Prof. Corbin.

BRITISH COLUMBIA

Pacific Coast T.A.P.P.I.

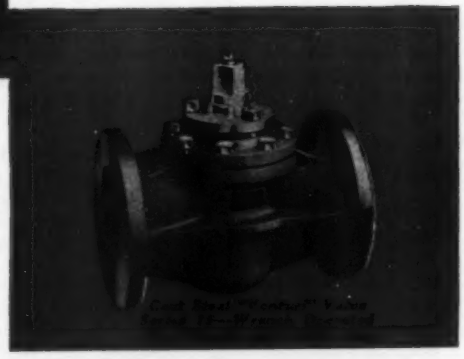
Northwest technical men of the pulp and paper industry will go to Powell River, B. C. for their fall T.A.P.P.I. meeting which will be one day only—October 23, according to plans announced last month by C. W. Morden, chairman, Portland, and Harry Andrews, vice-chairman of Powell river.

Speakers on the program are expected to include Dr. C. E. Curran of the U. S. Forest Laboratory, J. D. Jenkins of the Canadian Forest Products Laboratory, and Dr. Harold Nightingale, sanitary engineer for the state of Washington, who

NORDSTROM VALVES

Truly corrosion-resistant valves for the PAPER INDUSTRY

The Perfect Application of a Principle



A Tight shut-off all the time on SULPHITE-SULPHATE-SODA LINES

Corrosion, clogging and leaking are a common valve problem in paper mills. Correct valving was difficult to obtain until Nordstrom Valves were developed for this severe service. On all bleach lines, black and green liquor lines and on all filter installations on both feed and vacuum lines, Nordstroms fill the need. They seal securely and are always easy to turn because the plug is constantly lubricated under pressure. There are no grooves or recesses that line contents can ever clog.

These valves are manufactured in metal for each severe service. Iron type is recommended for sulphate lines and the bronze type for sulphite. Two-way, three-way and four-way types available. Ask for new Catalog No. 8.

The above phantom view shows the Nordstrom "Sealdport" principle. Assures positive lubrication and a sealed port.

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Salt Lake City - National Equipment Co., 101 West 2nd South St.
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Factory - Oakland, Calif.

Canada - Peacock Bros., Ltd., Montreal, Toronto, Winnipeg, Vancouver. (Also Sydney, N.S.)
England - Audley Engineering Co., Ltd., Newport, Shropshire.
Buenos Aires, Argentina, - General Electric, Soc. Anon., Victoria 618 Esq. Peru.

has made some remarkable progress in a study of neutralizing the waste liquor from pulp mills.

Informal discussions will be held on subjects of current interest to the chemistry of paper making and pulp production. The banquet in the evening will be in charge of Robert Bell-Irving, mill manager of the Powell River company. Lawrence Killam, president of the British Columbia Pulp & Paper Co., Ltd., will be a featured speaker at the banquet.

Myron W. Black of the Inland Empire Paper Co., Millwood, is secretary-treasurer of the Pacific Coast Section of T.A.P.P.I.

❖ WISCONSIN ❖

Thilmany to Install New Machine

Important news of the month centers around the Thilmany Pulp & Paper Co., Kaukauna, Wis., where M. A. Wertheimer, president, has announced the purchase of a new 132-inch fourdrinier machine to be installed at the Kaukauna mill in the near future.

Uncertainty of the commercial pulp market led the company to decide to add the machine so it will be possible to consume almost the entire output of the Thilmany pulp mill in the company's own plant. Orders also have been placed for auxiliary equipment to go with the new machine.

Fourdrinier grades of a special character incorporating decorative designs will be manufactured on the new machine, using the marking roll process. Also a bleaching plant is being installed so bleached kraft papers with and without designs and new to the market can be produced.

Dismantling of the company's Wisconsin tissue branch at Appleton is about completed. The two machines are being moved to Kaukauna and will be set up in an addition to the main mill. They will be ready for operation about Jan. 1, 1932. This change permits flow of pulp direct to the machines, thus eliminating the shipment of pulp from Kaukauna to Appleton by rail and the extra handling.

With these changes completed, the company expects to effect economies and place itself in a strong position in the present highly competitive markets.

Another consolidation along the same lines is being undertaken by the Marathon Paper Mills Co., Rothschild, Wis. The pail and carton division at Baltimore, Md. is being discontinued. The pail and round can machinery is being moved to the Marathon carton plant at Wausau, and the carton and special departments to the carton division at Menasha. A large warehouse under construction at Menasha will permit rearrangement of one of the buildings to accommodate the new department. One hundred men were employed at the Baltimore plant since it was acquired in 1927, eight of whom will be transferred to Wisconsin. The move was made in order to concentrate all carton activities in Wisconsin and permit of economies.

Earnings of the Marathon Paper Mills Co. for June were $77,124 as compared to $75,763 in June, 1930, according to reports announced by the company. The Northern Paper Mills, Green Bay, also has made a favorable showing for the last quarter and has ordered payment of the regular quarterly dividend of $1.50 on the $6 preferred stock and $1.75 on the $7 preferred stock.

In view of favorable business operations since taking over the bankrupt Peshtigo Paper Co. in 1929, the Badger Paper Mills, Inc., Peshtigo, is retiring $100,000 of bonds out of an issue of $400,000, according to Edward A. Meyer, president. The company is paying dividends regularly and now has a payroll of $350,000 a year.

Production of the Manufacturers Box Co., Milwaukee, has been increased to an average of 125 finished shoe boxes a minute, produced on elaborate automatic machinery. The improved condition of the shoe industry has caused the plant to speed up. This company is owned co-operatively by a group of shoe manufacturers.

No changes have been made in the operation of the Newport Chemical Company's plant at Carrollville, since it was acquired recently by E. I. Du Pont de Nemours Co., Wilmington, Del. Policies in effect in the past will be followed, but considerable duplication of research work will be saved.

Testimony of users indicated there was little ground for accusations made recently against paper box manufacturers in Milwaukee alleging a combination in restraint of trade. A hearing was held by the Wisconsin department of markets and when candy, apparel and other manufacturers were called in, it was found that competitive bids are always furnished and that the business is not controlled by any one concern.

Forestry News

Important changes in the forestry policy of the State of Wisconsin have resulted through the appointment of Robert B. Goodman, Marinette, and Brig. Gen. Ralph M. Immell, adjutant general of the state, Madison, as members of the Wisconsin Conservation Commission. Mr. Goodman is a large lumber and timber operator and also is interested in several Wisconsin paper mills.

Hereafter, forestry will be the major activity of the commission instead of the preservation of fish and game, and fire prevention will have first attention. Detection of fires will be possible more quickly through an augmented force of forest rangers throughout the northern part of the state. Additional watch towers also will be installed. Forty-eight additional rangers have been hired.

When fires assume serious proportions, semi-military methods will be used in fighting them. An organization making thousands of men available is being perfected by Gen. Immell. It includes the use of 4,000 state and county highway employes and posts of The American Legion within the forest area. A rapid call system is being devised so they may be mobilized on short notice. Northern Wisconsin has been divided into four fire districts, with Fred G. Wilson, chief fire warden, C. L. Harrington, superintendent of forests, and W. P. Clawson and A. Kirkpatrick, rangers, in charge of them.

Better protection thus will be given private reforestation areas of paper companies, to augment the fire prevention systems they have adopted themselves. The Nekoosa-Edwards Paper Co. has 5,200 acres reforested to date, with 3,000 acres to be added annually until a production of 90,000 cords of wood a year is assured after 40 years time, thus taking care of the entire needs of the mill. The Consolidated Water Power & Paper Co. has 1,250,000 seedlings growing in an experimental plot and expects to reforest about 1,000 acres next year. Thousands of acres also are under cultivation by the Tomahawk Kraft Paper Co.

An interim committee of the Wisconsin legislature is holding meetings in northern Wisconsin to obtain data relative to forest fires, reforestation, state and county forests and other needs.

Dedication of the Ottawa, Hiawatha and Marquette national forests in the upper peninsula of Michigan took place recently, with W. A. Munro, president of the Munising Paper Co., Munising, Mich., in charge. Mr. Munro is president of the Upper Peninsula Development association. A stone marker containing a large bronze tablet was placed at the entrance to each forest. Dr. Raphael Zon, director of the Lake States Experiment station, and E. W. Tinker, regional federal forester, assisted in the exercises.

J. R. Hafstrom, traffic manager of the Marathon Paper Mills Co., was one of the spokesmen for Wisconsin paper mills at the recent hearing in Chicago on the proposed 15 per cent increase in freight rates. He made plain that mills could not stand another boost, in view of a 45 per cent raise

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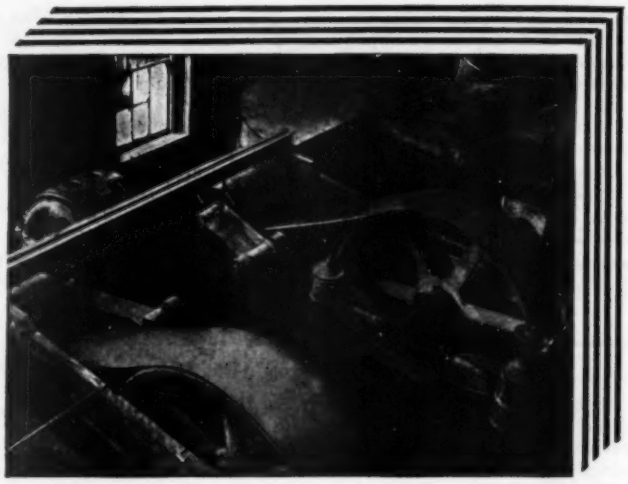
for hard, "belt breaking" drives ▲ ▲ ▲ ▲ ▲ ▲



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In each step IT IS BUILT TO STAND BRUTAL WEAR

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Long, straight, sturdy auto tire cords are the basis of FLEXICORD All Cord Belt. These cords provide flexibility, prevent stretching, and thereby assure longer, more economical belt service.

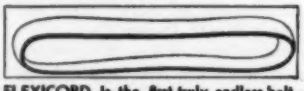
2.

These load-carrying cords are then encased in a cord envelope, with cords running crosswise, greatly increasing the life of the belt.

3.

The final cover of FLEXICORD is a tough, rubber composition that has proven a "world beater" for resisting wear.

4.



FLEXICORD is the first truly endless belt. Having no joint or splice, the thickness is perfectly uniform all around.

FLEXICORD is the product of long and careful experimenting in search of a real endless belt (positively no joint or splice) that has the stamina to withstand severe loads, sudden starts, and sudden stops.

Note, in the illustrations to the left, each step in the construction of FLEXICORD All Cord Belt. Then weigh the following advantages against any ordinary belt:

CUSTOM-TAILORED and ENDLESS

FLEXICORDS are not "stock" belts. Each is individually built to exact size, without joint or splice.

NO DRIVE TOO HARD

FLEXICORD is made especially for severe short center drives where tighted take-up idlers are used.

NON-STRETCHABLE

The straight-laid, lengthwise, heavy auto tire cords in FLEXICORD prevent stretch and greatly add to the strength of the belt.

CLOSER PULLEY CONTACT

The tough rubber cover gives FLEXICORD slip-tight pulley hug, assuring delivery of maximum horsepower.

FLEXICORD answers the need for a belt that will more economically serve difficult drives in the paper mill. Wherever an endless belt is required, the new, improved FLEXICORD will effect remarkable savings for you. Write for sample and details.

The Cincinnati Rubber Manufacturing Co

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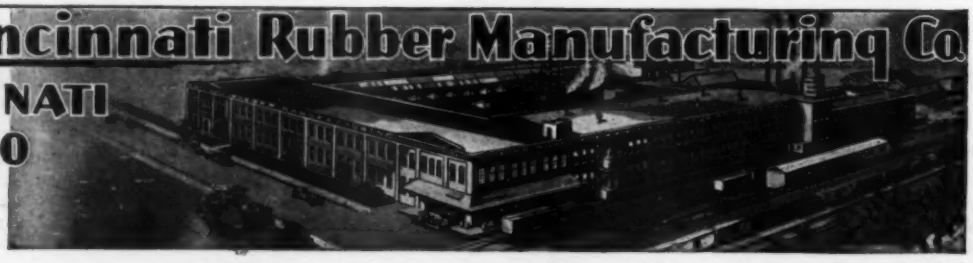

scheduled to go into effect in December. Truck shipments would be made by Michigan mills if the increase was made, James T. Dougherty, of Kalamazoo, Mich., said. He represented the Michigan Paper Mills Traffic association, which now ships 40 per cent of its 941-ton output every 11 weeks by truck.

Negotiations looking toward the removal of the Peavey Paper & Printing Co., Ashland, to Ladysmith, have been conducted recently but no decision has been announced. Business men of the latter city have been interested in such a change in order that the Great Western Paper Co. might resume operations and become the source of supply for the converting plant.

Ocean vessels carrying Swedish pulp are now passing through the Great Lakes and bringing their cargoes direct to Green Bay and Milwaukee. The Hoberg Paper & Fibre Co., Green Bay, recently received 8,346 bales of groundwood pulp. Three thousand tons have been received at the Atlas Storage Co., including some from Germany and Holland, and 5,000 additional tons are expected this fall to be held for local mills.

Operations were to be resumed shortly by the Outagamie Paper Co., Kaukauna, after a shutdown of several weeks while the mill flume was being repaired and a six-inch concrete elevation added to the retaining walls.

Enrollment at the Institute of Paper Chemistry at Lawrence college, Appleton, this year consists of 26 students, the largest number thus far admitted. The new building dedicated last month made it possible to accommodate this number, who come from many states and are graduates of prominent colleges. All have had practical experience during the last summer in various paper mills.

A patent has been granted to S. J. Campbell, of the Hudson-Sharp Machine Co., Green Bay, on a machine combining several operations in making paper napkins. It embosses, scallops and folds without transferring stock from one machine to another, and will reduce cost of manufacture.

Whiting-Plover Paper Co., Stevens Point, intends to increase its advertising to improve jobber relations and reach the consumer with its rag content bonds. With this mind, R. F. Bellack, formerly with the Storey-Bellack Co., advertising agency, Wausau, has been engaged as advertising manager. He has handled this account for sometime.

Operations were suspended temporarily last month by the Fox River Paper Co. at the Telulah mill at Appleton. A new steel roof was put on the building by C. R. Meyer & Sons Co., using mill employees on the work. About $15,000 was spent for the improvement.

L. M. Alexander, president of the Nekoosa-Edwards Paper Co., vice-president of the Wood County National bank at Wisconsin Rapids, Wis. since established in 1891, has been made chairman of the board of directors. His son, John E. Alexander, has been elected vice-president. Guy O. Babcock, vice-president, and a member of the board of directors of the Nekoosa-Edwards Paper Co., has been elected president due to the death of Frank J. Wood. Judson G. Rosebush, president of the Patten Paper Co., Ltd., also is a member of the board.

Two fatal accidents from peculiar causes have occurred in Wisconsin mills recently. Fred B. Herrick, 63-year-old painter at the Kimberly-Clark Corporation, plunged 30 feet when a truck pulling away from a building engaged a rope hanging from Herrick's scaffold and pulled away the platform. Edward Besaw, 32-year-old employee of the Northern Paper Mills, Green Bay, met death when he was swept from the top of a mill building by a fire hose he and other members of the mill fire squad were using in practice. He lost his balance and was unable to stop himself from reeling to the edge of the roof.

❖ NORTHERN NEW YORK ❖

Brownville Board Making Changes in Plant

The Brownville Board Co. of which J. Munson Gamble is the head is making important changes in its paper machine and other equipment with a view to increasing the variety of grades of paper the company manufactures. The mill has made manila and wood pulp board for the past several years. It is one of the most efficient mills of its kind and the alterations in progress will increase the efficiency in addition to making provision for a larger number of grades of product.

The mill of the Brownville Board Co. is a one-machine mill equipped with a 112-inch cylinder machine trimming 102 inches, five one-ton beaters and two jordan engines. The company makes its own groundwood pulp, its mill being equipped with six grinders of 400 horsepower each, and six wet machines. On Aug. 1, John Brougham became the superintendent of the mill and has been given a free hand by Mr. Gamble in the matter of making the equipment alterations.

The Stebbins Engineering and Manufacturing Co. of Watertown, manufacturers of paper mill equipment, has moved its offices from the Northern New York Utilities building to the Northern New York Trust Co. building in Watertown.

Charles E. Norris, a vice-president of the St. Regis Paper Co., has been elected president of the Northern New York Utilities, Inc., to succeed the late John N. Carlisle of Watertown. Mr. Norris who is also vice-president and secretary of the Niagara Hudson Power Corp. will retain his offices in New York City but will spend sometime in Watertown.

Foresters Hold Annual Meeting

The Empire State Forest Products Association held its annual meeting at Newcomb, Sept. 25. The following officers were elected: Charles E. Norris, of Watertown and New York, president; Thomas Stirling, Mechanicville, vice-president; directors, Clarence L. Fisher, Lyons Falls; A. A. Low, Old Forge; W. C. Hull, Tupper Lake; F. B. Wilson, Glens Falls, and George N. Ostrander, Saratoga.

Leading foresters of the New England states and New York state attended a joint conference of the Empire State Forest Products Association and the New England Forest Research Council which was held at Newcomb in connection with the convention. The conference was headed by Edward Behre of the United States Conservation Service, who is secretary of the New England Council.

John D. Haskell of Fulton has invented a pulp-beating apparatus and the United States patent office has issued a patent which covers 20 claims of new patentable features which are incorporated in the construction of the apparatus. The pulp-beating apparatus consists of a combination tub, a pulp breaker, a beater roll, and a series of refuse receptacles arranged to receive the beaten stock. Mr. Haskell assigned his interests in the invention to the Dilts Machine Works, Inc., of Fulton. He filed his application Nov. 5, 1929.

The directors of the St. Regis Paper Co. recently declared the regular quarterly dividend on both the common and preferred stocks. The St. Regis common is on a 60 cents a year

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A PRODUCT with a BACKGROUND

No CALENDER *can be better than the* ROLLS *in it*

The superior finishing qualities of Perkins Calender Rolls are the natural result of the longest and broadest experience in this highly specialized field of manufacture.

Perkins roll shop is the largest in the world.

Perkins organization is always prepared to build your rolls to meet exactly your production requirements.

Perkins refills and remakes include the rolls of any manufacture, domestic or foreign, for any application in the paper industry.

B. F. Perkins & Son, Inc., Holyoke, Mass.

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Platers
Mullen Paper Testers
Tensile Testers
Ventilating Fans
Rag Cutters
Stock Cutters
Paper Dampeners
Bleach Ejectors

basis, with 15 cents being paid quarterly. On Oct. 1, 15 cents was paid on the common and $1.75 on the preferred.

Attorneys Purcell, Cullen and Reynolds of Watertown have filed papers with the department of state at Albany in connection with the dissolution of the firm formerly located in Brownville doing business as the Warren Parchment Co.

NEW YORK CITY

I. P. Income Shows Increase

The International Paper & Power Company's report for the quarter ended June 30, 1931, shows a net income of $1,013,436 after depreciation, amortization, interest, Federal taxes and dividends on preferred and minority common stocks of subsidiaries, compared with $601,055 in the similar quarter of 1930. Net income for the first six months of the current year totaled $1,606,977 after charges, subsidiary preferred dividends, etc., against $1,271,111 in the first half of last year.

Earnings for the first six months of 1931 reflect adjustments applicable to the first quarter which were made to cover the retroactive effect of the $5 a ton cut in newsprint prices. The volume of business is still low and prices for most grades of paper are still weak, the company explains, but reduction in operating costs were made during the second quarter so that a distinct increase in earnings resulted over the earnings for the first quarter.

Nathan T. Pulsifer

Nathan Trowbridge Pulsifer, former president of Valentine & Co., varnish manufacturers; for many years vice-president of the Outlook Publishing Company, and formerly prominently identified with the paper industry, died at his home, Houghton Farm in Orange County, New York, on September 9 in his eightieth year. In 1878 Mr. Pulsifer became managing owner of the Oakland Paper Company of Manchester, Conn., which he directed until its merger with the American Writing Paper Company in 1899. He continued for some years thereafter his connection with the paper industry through his place on the board of directors of the American Paper Company, but later became interested in Valentine & Co. During his years at Manchester, Mr. Pulsifer organized the Manchester Light & Power Company, and also the Orford Soap Company which later became the Bon-Ami Company. He was president of Valentine & Co. for six years, and thereafter was chairman of the board until his retirement in 1930. He is survived by two sons.

A. E. Dubey, widely known in the paper trade with which he has been identified for 44 years as a salesman and mill representative, has resigned his connection with Frank L. Scott & Co., of New York, and is now associated with his son, A. E. Dubey, Jr., in the firm of Larson & Dubey, Inc., of 40 Worth street, New York, where he has added a paper department. The new department of the company will deal in paper of all kinds for direct mill shipment to converters, jobbers and consumers. Mr. Dubey, Sr., is a former president of the New York Paper Trade Association, and for ten years represented New York on the National Board.

Effective September 15, the International Paper Company and subsidiaries reduced wages and salaries ten per cent, according to announcement from the company's headquarters in New York City.

H. E. Lindquist has been appointed manager of board sales for Frank L. Scott & Co., of 270 Madison avenue, New York, in connection with the mills of the Stevens & Thompson Paper Company, located at Walloomsac and North Hoosick, N. Y. With an unusually varied experience in the sale and distribution of board specialties, Mr. Lindquist brings to his position an intimate knowledge of board manufacture and many friendly contacts with both paper converters and paper merchants in many parts of the country.

William F. Ebner, for 14 years associated with the New York branch of E. Butterworth & Co., Inc., is now with Darmstadt, Scott & Courtney, Inc., importers of and dealers in papermakers' supplies of 150 Nassau street, New York.

Thomas Shaw Hall, president of the Hall Paper and Specialty Company, of 27 Thames street, New York, died on September 19 at his home in Mount Vernon, N. Y. He was born 62 years ago in St. John, N. B. A widow survives.

Daniel M. Hicks and Hicks-Costarino Sever Connection

Announcement has been made by Daniel M. Hicks, Inc., dealers in and importers of paper manufacturers' supplies of 200 Fifth avenue, New York, that that company has disposed of all its interest in the Hicks-Costarino Company, Inc., packers of waste paper and other paper mill supplies of Brooklyn, N. Y., and also that Leonard F. Hicks is no longer connected with Daniel M. Hicks, Inc. The Hicks-Costarino Company, Inc., was organized 12 years ago by Daniel M. Hicks, Inc., to grade and pack waste paper, and the latter concern has since acted as selling agent. The activity of Daniel M. Hicks, Inc., in waste paper and in other papermaking materials will continue with strict supervision, and the company will continue to serve its mill customers as in the past.

A later announcement stated that Leonard F. Hicks had gone with the Hicks-Costarino Company, Inc., for which he will continue to handle sales, and that the company henceforth will sell all of its products direct.

The Steiner Paper Corporation, of 50 Franklin street, New York, has filed notice of an increase in capital from $25,000 to $100,000.

E. J. Rose, well-known in paper circles and formerly connected with the Union Bag and Paper Corporation and the Southern Kraft Corporation, has been engaged by the Bayless Pulp and Paper Corporation to take full charge of sales, succeeding T. W. Cole, resigned. Mr. Rose will be located in the sales headquarters of the company at 2 Lafayette street, New York. D. S. Scott, long associated with the Bayless Corporation, will assist Mr. Rose, as will O. A. Kent, who recently joined the sales staff of the company.

MICHIGAN

Michigan Mills Receive Swedish Pulp

The first cargo of wood pulp from Sweden was delivered October 8 to the Watervliet Paper Mill Co., Watervliet, Mich. The Swedish ship arrived at South Haven, Mich., by way of the St. Lawrence river and the Great Lakes.

It is reported that a dozen foreign boats will arrive at South Haven before the end of the year with cargoes of pulp between 1,400 and 2,000 tons each. These cargoes will give South Haven the greatest harbor tonnage in its history. The pulp will be trucked to Michigan plants as needed.

Elbert G. Milham, for many years head of the chemical laboratories and technical control of the Bryant Paper Co., Kalamazoo, has resigned to take up the foremanship of the coating mill of the Watervliet Paper Co., Watervliet, Mich.

The Michigan Division of the Superintendents Association will resume its regular meetings October 15, at which time officers for the ensuing year will be elected. The meeting will be held at the Columbia hotel, with dinner at 6:45.

Kraft And Soda Mill Executives Are Urged To Investigate The Advantages Of The

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A more efficient and economical method for recovering chemicals—a means of reducing steam cost by fully utilizing waste heat—a system that overcomes the nuisance of dirt, smoke and odor. The combination of proven advantages will, in most plants, completely justify replacement of existing equipment from a standpoint of operating economy as well as of improved quality and increased capacity of pulp production.

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Canadian News

Newsprint Output Lower in August

Canadian newsprint mills during the month of August operated at 51.3 per cent of rated capacity, a new low record, and contrasting with 56.8 per cent of capacity in the preceding month and with 66.4 per cent in August of last year. For the eight-month period of this year ended with August, operations of Canadian mills were at 58.3 per cent of capacity, which compares with 71.5 per cent in the corresponding eight-month period of last year.

Production of newsprint paper in Canada during August of this year amounted to 165,124 tons, as against 182,731 tons in the preceding month and 202,043 in August of last year. Shipments from the Dominion during the month under review amounted to 162,303 tons as compared to production of 88,344 tons for the United States mills, and shipments of 89,047 tons.

The Canadian mills produced 219,739 tons less in the first eight months of 1930, which was a decrease of 13 per cent. The output in the United States was 106,808 tons, or 12 per cent, less than in the first eight months of 1930. While the mills in the Dominion were operating at 51.3 per cent of rated capacity in August, the United States mills operated at 59.2 per cent, while the mills in Newfoundland operated at 96.4 per cent.

Canadian exports of pulp and paper in August were valued at $11,185,549, which was an increase of $247,401 over the previous month, but a decrease of $1,514,788 from the exports of August, 1930. Wood pulp exports for the month were valued at $2,502,372 and exports of paper at $8,683,177 as compared with $2,475,628 and $8,462,520, respectively in the month of July.

One of the most amazing paper mill promotion announcements which have appeared in some years is a page advertisement and reading notice in the August number of Newspaper News (Australia) of the Imperial Pulp and Paper Produces, Ltd. (to be registered under the Companies Act of New South Wales). It is claimed that Australia has a "huge supply" of waste materials that can be converted into paper pulp by the "Ortrand bleaching process," and that the pulp thus obtained can be converted by the "hydroloid" process into grades of paper varying all the way from newsprint to bank note paper. A two-million pound investment would care for the construction and equipment of a mill which should be able to supply the Australian market with most of its paper requirements. The whole tenor of the announcement would seem to be highly extravagant.

The threatened curtailment of Canadian newsprint exports to Australia does not seem ready to materialize. Reliable opinion at Canberra seems to consider that the Commonwealth Goverment, the present government at all events, will not favor a bounty for the production of newsprint in Australia, without which a domestic industry could not be established to compete with British and Canadian importations.

The "Safest Mill in Canada" contest, sponsored each year by the Pulp and Paper Magazine, started on July 1 as usual, to last until December 31. At the end of the first month there were four mills in Class A which had had no accidents whatever involving lost time, while in Class B five mills had a clean sheet. It was very gratifying that no fatal accidents occurred during the first month.

Y. Aoyama and R. Okawa of Tokyo, chief engineer and general superintendent of the Fuji Paper Mills, Ltd., Tokyo, arrived in Vancouver sometime ago, on board the C. P. R. steamship Empress of Canada. The two pulp and paper officials are on a business trip to the United States and Canada, and they will inspect a large number of pulp and paper mills on this continent during their stay here.

Industry to Benefit from Research at McGill University

Valuable contributions in various fields of research relating to pulp and paper and cellulose problems have been made in the Industrial and Cellulose Chemistry Laboratories in the Pulp and Paper Research Institute, which is closely affiliated to McGill University, during the past college session, according to the report of the year's activities, which has recently been published. Fifteen workers were engaged in research work in this division, and a co-operative research was carried out with the department of biology.

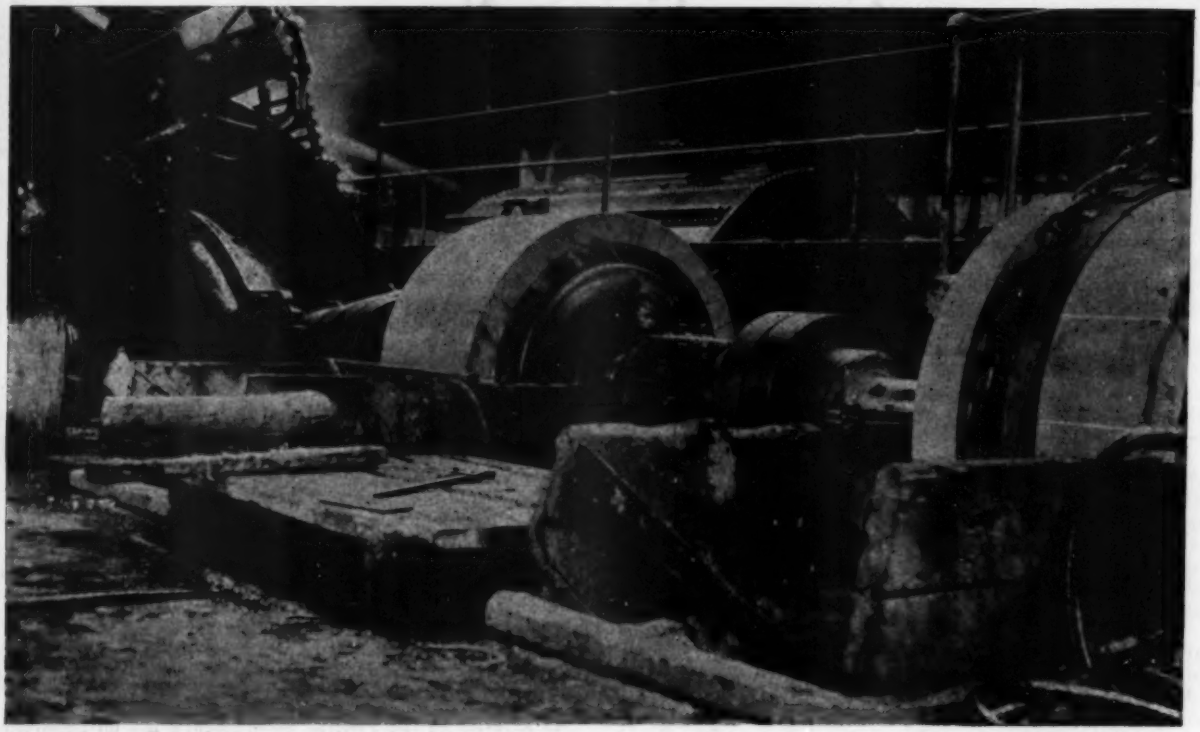
Considerable attention has been called to and favorable comment made upon Dr. J. B. Phillips' work on "The Resins of Jack Pine," which is regarded as a distinct contribution to this field. It is felt that it should play an important part in solving the problem of pitch trouble in the manufacture of newsprint. Considerable new information has been obtained regarding the structure of cellulose, and a series of illuminating papers written dealing with the action of bacteria on carbohydrates, one outcome of which has been a synthesis of cellulose from sugars by bacterial action.

As a result of the Federal Government's tax on imported fiction periodicals, the McFadden interests have decided to publish a number of their magazines in Canada. According to latest advice, five will be printed in Montreal and one in Toronto. This is expected to not only give added work to Canadian printers, but also increase the consumption of Canadian-made paper required for the printing of these Canadian editions.

❖ QUEBEC ❖

Canada Power Plan Remains Unchanged

A federal charter has been granted to Consolidated Paper Corp., successor company to Canada Power and Paper Corp. and its subsidiary companies. Incorporators includes L. J. Belnap, who becomes its first president, together with representatives of the Dunning committee, consisting of Hon. C. A. Dunning (committee chairman); Norman J. Dawes, a member; Percy Thornhill, as representing E. A. MacNutt of the Sun Life Assurance Co.; and Guy M. Todd, representing J. J. Rudolf of Iselin and Co. Wide powers are given under the new charter, including newsprint and lumbering activities, the manufacture and distribution of other wood products, extensive privileges in connection with development of electrical energy, rights to carry on mining and transportation operations, including steamships and aeroplanes. Water power rights are a natural department, as the company controls wide srtetches of timber lands through watersheds. The company will also control whatever mineral content may be carried in its land holdings. The capital structure will be substantially as already as outlined previously in these columns. From now until the annual general meeting of 1936, the 15 directors will be divided into two classes, six to be known as "annual class directors," representing the security holders, and the other nine members designated "committee class directors," representing the Dunning committee. The former class may be elected year by year, but the latter will be named for the five-year term. Thereafter, committee control will end and the Corporation will carry on of itself.



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Continuous service — years of it — continuous high quality of pulp when the Norton Pulpstone goes into action.

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Refractories - Floor
and Stair Tiles

Hon. Charles Dunning has announced the election to the board of Consolidated Paper Corp. of Major-General Hon. S. C. Mewburn, as a director representing the shareholders. At the time the plan of re-organization of Canada Power and Paper was declared effective, it was stated that the board, then announced, was complete with the exception of a director to be chosen, who would probably be a prominent executive of the Bank of Montreal, of which Major-General Mewburn is vice-president. He is also a director of the Bell Telephone Co., of Canadian Dredge, of Dominion Power and Transmission, of the Royal Trust Co., Hamilton Bridge, Lake Superior Corp., Canada Northern Power, Steel of Canada, Tuckett Tobacco Co. and the Mutual Life Assurance Co.

It is reported that there is a strong likelihood of an important executive position in the new company being offered to Hubert Biermans, former president of the Belgo-Canadian Paper Co. Mr. Biermans took an active part in opposing the Canada Power and Paper plans as they affected the security holders of the Belgo company, but is now stated to have deposited his personal holdings of Belgo securities for inclusion under the reorganization plan, at the same time commending the Protective Committee on their choice of a chief executive, stating that L. J. Belnap is the best man that could possibly have been selected. Mr. Biermans, who returned to Canada last month after a short trip to Europe, not only has unusual sales ability and wide connections among newsprint consumers, but has remarkable achievements to his credit in the management of mills. Prior to its entry in the St. Maurice Valley merger, the Belgo company under him had become one of the most successful and efficiently operated companies in the newsprint field in Canada.

The Protective Committee has given consideration to the representations made on behalf of a group of preferred shareholders of the Belgo company for more generous treatment than was provided for in the Committee's plan, and after carefully reviewing the facts relevant to the contentions made, the Committee concluded that there was nothing which would warrant it in proposing to the other security holders any modification or alteration of the plan as announced.

As had been generally expected, the directors of Canada Power and Paper Corp. and each of the boards of the latter's constituent companies gave formal approval last month to the offer from the Consolidated Paper Corp. to acquire and take over the assets of Canada Power and subsidiaries on the terms already published in these columns. The next step will be the calling of special shareholders' meetings of Canada Power, Belgo, St. Maurice Valley, Anticosti and Port Alfred companies, at which gatherings the various boards will recommend the plan to their respective shareholders. The following figures, showing the proportions of the various securities which had been deposited up to September 5, indicate that the shareholders have already shown their acquiescence to the project, and the meetings will therefore probably be largely formal: bonds 91.1 per cent, debentures 92.5 per cent, preferred shares 88.0 per cent, common shares 89.5 per cent.

A complicated situation that has existed for sometime, involving Canada Paper Co., St. Maurice Valley Corp. and Howard Smith Paper Mills, was cleared up last month by the action of Canada Paper Co., preferred shareholders of which have approved cancellation of the lease of the business to St. Maurice Valley Corp. and the sub-lease thereof to Howard Smith Paper Mills. The result of this in brief is that both lessees are relieved of obligations in respect of guarantee of Canada Paper bond interest and preferred dividends while arrangements have been made to relieve Canada Paper of indebtedness incurred from advances made to it by both St. Maurice and Howard Smith.

Widely-known in Montreal's business world and in pulp and paper circles, James Hewton, manager of the Sault Aux Récollets paper mill of J. R. Walker and Co. died on September 10 at his late residence in Montreal. Born in Quebec City in 1862, Mr. Hewton was educated in public schools there. In 1884 he came to Montreal and entered the employment of the firm of McNeven and Cole, owners of paper mills in the province. He remained with the firm through several changes, and at the time of his death was manager of the Sault Aux Récollets mill of J. R. Walker and Co. which had taken over the McNeven and Cole interests. He is survived by his wife (née Helen Smith), a son, two daughter, one brother and two sisters.

Fellowship for Cellulose Research Awarded

Raimbault de Montigny, who received the degree of B.Sc. in applied science with honors in chemical engineering at McGill University this year, has been awarded a three-year fellowship for research work in cellulose and wood in the Division of Industrial and Cellulose Chemistry in the Pulp and Paper Research Institute at McGill University. He is the son of Louvigny de Montigny, chief French translator in the Senate, Ottawa.

The prize was made possible by a generous contribution recently made by Canadian International Paper Co. The object of the fellowship, in aiding research work on cellulose chemistry, is to bring education and industry into more effective relations, and thus serve the best interests of humanity. It is felt that the industry will profit by the efforts that are thus being brought to bear on the intensive study of raw materials.

Lumber Companies Plan Operations

As an aftermath of the meetings which Premier L. A. Taschereau had with heads of lumber interests some weeks ago, for the purpose of increasing wood cutting in the province this fall and winter, to give work to the unemployed, a number of these firms have already asked for wood cutting permits.

Among the companies seeking permits are Price Bros. and Co. and the Donnacona Paper Co., the former to cut around the basin of the Rat River and the Mistassini River, and the latter on the Jacques Cartier River. Permits asked by other companies are for cuts on the Harricana and Abitibi rivers. Price Bros. will cut 40,000,000 feet, board measure, and Donnacona 8,200,000.

The permits are given for a period of 12 months, and each company has to make a deposit of $500 at the Provincial Treasury as a guarantee that the specified conditions will be followed.

Officials of the head office of Canadian Industries, Ltd., have confirmed the announcement that the new cellophane plant, which was to be erected at Three-Rivers at a cost of $1,500,000, would be located instead at Shawinigan Falls. The Fraser Brace Engineering Co., of Montreal, has been awarded a no-bid bulk contract for construction of the plant, and the work of clearing the site has already commenced.

President John H. Price has announced that the board of directors of Price Bros. and Co. had decided to cut the company's dividend, payable on October 1, from one-half of one per cent to one-quarter of one per cent for the quarter ended August 31. He stated that the cut had been decided upon to "further conserve the liquid resources of the company in view of the present depressed conditions not only in the newsprint and lumber industries, but in general world-wide construction of trade." Mr. Price, however, reported that the company had sold a considerable part of this year's cut of lumber and the outlook for the concern's newsprint sales for the coming year was comparatively good. Everything possible had been done to reduce operating expenses as well as overhead charges and mill costs, Mr. Price said.

The Duke Price Co., owners of large tracts of land in the Province have offered the municipality of Méthot, in the Lake St. John district, 2,000 acres on which unemployed residents of the region would be established. If the offer is accepted the municipality will pay the sum of $30 a year for 15 years. The company further agreed to pay the taxes on the property and announced that if farmers cultivated the land in a satisfactory manner, the company would, following a specified period, turn the land over to them without payment.

TOPS, BOTTOMS AND PRESSES—ALL KENWOOD TANNED BOARD FELTS—IS THE EFFICIENCY ORDER OF THE DAY

Rugged strength combined with enduring softness and openness, uniform surface and long life—these attributes of all Kenwood Board Felts are equally important at both the wet end and the presses.

Kenwood Felts assure utmost water removal and provide for the higher speeds today's production demands. With all felts co-related —all Kenwoods—all built to work with one another—the board machine reaches new standards in efficiency.

Today's Kenwood Board Felts are the result of years of progressive, scientific development. Kenwood pioneered the one-sided board felt. The same research service developed and perfected the patented Kenwood tanning processes which protect the felt from the deteriorating effects of acids.

KENWOOD WOOL PRODUCTS

A third major development is that in which a new method of yarn construction, while adding nothing to the size or weight of the yarn, provides definite advantages, both in strength and increased openness.

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KENWOOD FELTS

Canipco News

Canadian International Paper Co. has decided to curtail lumbering operations this year in the Gatineau district surrounding Maniwaki, and it is reported that some 2,500 shanty men will be affected. A mass meeting was held at Maniwaki to protest against the decision of the company. A. A. Legault, M.L.A. for the county, declared before the gathering he would endeavor through the provincial government to have lumbering operations allotted to the district. In connection with the company's decision it should be remembered that it carried out a heavy cut in the district last year with a view to providing as much employment as possible. Owing to water conditions, most of the cut has not been driven down to the mills, and it is the intention of the company to bring down the supply of wood this year now that a plentiful water supply has been made available by the new Cabonga storage dam and reservoir.

Delivery of 6,000 hp. from the Gatineau Power Co. was ordered on September 16, instead of October 1, by the Ontario Hydro-Electric Power Commission. The extra supply was ordered to meet the demand for power from municipalities in the eastern Ontario system. The Commission entered into a contract with the Gatineau Power Co. in 1927 to take 6,000 hp. annually in October of each year, commencing in 1928. The agreement also provided for an option to take an additional 40,000 hp.

Gatineau Power Co., a division of Canadian Hydro-Electric Corp., reported that consumption of electric energy for lighting and appliance use in the month of July increased 16 per cent over that of July of last year, and was the second largest month thus far this year, being exceeded only in June. Consumption of energy for these purposes in the area served by the company in each of the seven months this year has increased over the corresponding month of last year. For the first seven months as a whole, the increase was 13 per cent over the corresponding period a year ago.

Largely owing to the depressed conditions of the pulp and paper industry, the Shawinigan Water and Power Co. has reduced its annual dividend rate from $2.50 to $2.00 per share on the common stock, which will effect a direct saving in disbursements of $500,000 in the current year's accounts.

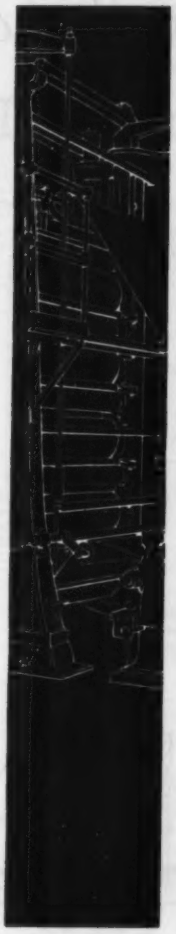
The sudden death of Harry Freed, president and founder of the Freed Paper Box Co., occurred at the end of August as he was sitting in his chair in the company's office in Montreal. Mr. Freed, who was in his 46th year, had gone to the office as usual, but he was suddenly stricken with heart failure when he was still at work. Mr. Freed established the business which now bears his name 30 years ago and had since guided it to the position which it now holds. He is survived by his widow, one son and two daughters.

On Friday, August 28, five laborers were injured in three explosions which occurred in the yards of the Donnacona Paper Co. at Donnacona. The blasts were caused by a spark when efforts were made to pick out sulphur from the teeth of a cylinder attached to a steam shovel. Three of the men were badly burned, the other two being only slightly injured.

In order to better serve its customers in the pulp and paper industry, the Canadian Ingersoll-Rand Co. has appointed A. Forbes Hale as manager of pulp and paper sales, with headquarters at 620 Cathcart St., Montreal. Mr. Hale is not a newcomer either to the Canadian pulp and paper industry or to the Canadian Ingersoll-Rand Co.'s pulp and paper department. He was engaged in the company's pulp and paper engineering sales and service work for several years prior to his departure for abroad in 1926.

For many years Montreal has been an important point in the movement of newsprint from paper mills to press rooms, and large quantities have been shipped out from this port. It is only within the last few weeks, however, that newsprint

For improved opacity in filled and coated stocks



The paper industry is showing increasing interest in the use of Titanox-B (Barium Base) as a means of improving opacity in paper stocks.

Titanox-B is widely known in the paint, rubber, leather and ink industries for its exceptional whiteness, high tinting strength, chemical inertness, unusual dispersing qualities, and moderately *high* bulking value. In particle size, Titanox-B is one of the finest of all white pigments. These properties should help paper manufacturers solve some of their processing problems—depending on the process or the type of stock produced.

Titanox-B is a true, composite, opaque pigment . . . a white, fine, uniform powder consisting of Titanium Oxide precipitated upon and coalesced with barium sulphate (blanc fixe).

In some cases the use of Pure Titanium Oxide (TiO_2) — another of our products—in combination with china clay is desirable.

Write for further information regarding Titanox-B and Pure Titanium Oxide—prices, chemical properties, etc. Address our nearest branch.

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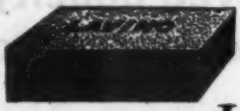

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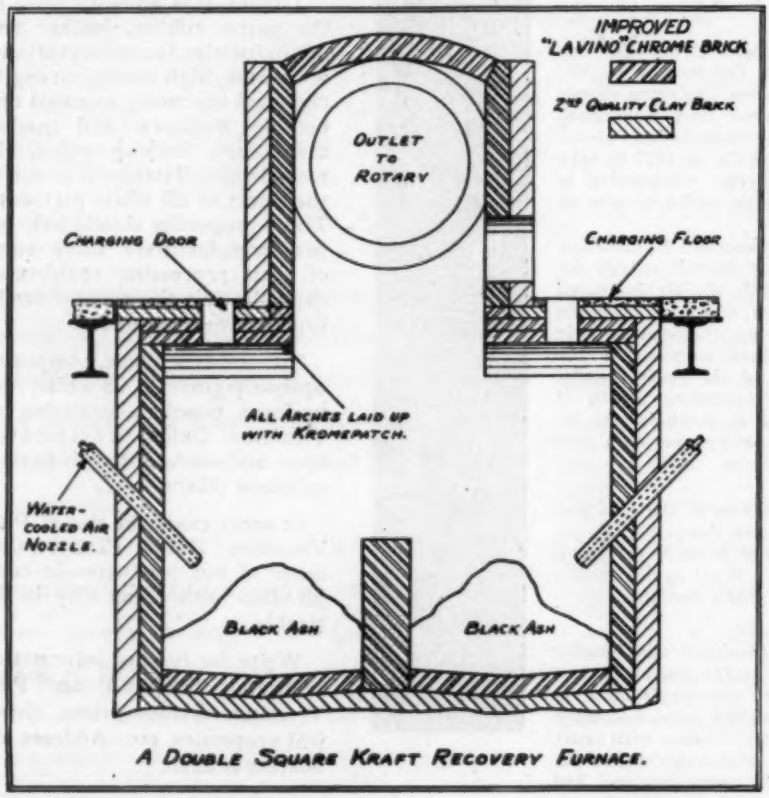

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The Production value of any KRAFT SMELTER depends to a large extent upon the service life of its refractory lining.

Now, it is generally conceded that CHROME BRICK HAS NO SUPERIOR as a lining for Kraft Smelters. In fact, linings of Lavino Chrome Brick outlast other Linings by at least 20%,—as proven by Certified Performance Surveys.

"Improved" Lavino Chrome Brick is the LAST WORD in Kraft Smelter Linings, because: (1) It has greater resistance to penetration of destructive elements. (2) Spalling loss is 75% less than that of any other Chrome Brick. (3) It has a higher hot-load strength. (4) Offers greater resistance to abrasion and erosion.

Remember — IMPROVED Lavino Chrome Brick possess these outstanding characteristics because they are made by an entirely new process.

WRITE FOR SAMPLES AND FURTHER INFORMATION

Kromepatch
the Multi-bond "Dry" Chrome Ore Cement is shipped in air-tight steel drums of 300 lbs. net weight, 312 lbs. gross weight. It can be troweled, dipped, sprayed, poured or brushed.

Even in parts of the Smelters where Soapstone or Fire Brick are satisfactory you will find it will pay you to use KROMEPATCH (The Multi-Bond Chrome Ore Cement) for the joints,—and Plastic K-N, Plastic Chrome Ore Refractory, for patching holes in burnt out brick work.

Literature and details sent upon request

Plastic K-N
is properly prepared Chrome Ore in "Plastic Form." It is shipped "ready for use" in steel containers of 200 lbs. net wt.—209 lbs. gross wt. PLASTIC K-N is the most permanent and reliable "Plastic" Refractory for Monolithic Furnace Bottoms and Molding Burner Blocks.

E. J. LAVINO AND COMPANY

REFRACTORIES DIVISION

CHROME, MAGNESITE AND SILICA REFRACTORIES

BULLITT BUILDING PHILADELPHIA

"Pioneers in Chrome Refractories"

has come into Montreal by water for local consumption. This development has been worked out as the method for shipping paper from the Donnacona mill of Price Bros. to La Presse, the most important French newspaper in the world outside of France. Heretofore this product had been brought in by rail, although the Donnacona mill has for some years shipped paper in barges to New York points via the Richelieu and Champlain canals.

ONTARIO

Abitibi Jottings

Abitibi Power and Paper Co. has declared a quarterly dividend of 1¾ per cent on the seven per cent cumulative preferred stock, payable October 1 to shareholders of record at the close of business on September 19.

Abitibi has resumed its place as the world's biggest producer of newsprint since Canada Power and Paper Corp. is reorganized without the 500-ton mill of Anglo-Canadian. Abitibi's capacity is 2,200 tons per day; the new Consolidated Paper Corp. has a productive capacity of 2,000 tons, Canadian International Paper 1,400 tons, St. Lawrence Paper Mills 1,000 tons, and Price Bros. a little less.

The Sault Ste. Marie newsprint mill, which had been closed since November 20 last, was started up again on September 1, two machines being put into operation. The third newsprint machine was started up on the 15th, and the fourth is expected to be brought into operation very shortly.

Announcement that a contract for 65,000 cords of pulpwood for the groundwood and sulphite mills of the Fort William plant of the Great Lakes Paper Co. had been let to the Pigeon Timber Co., Ltd., was made last month by Frank Spence, M.L.A., Fort William. In filling the contract, employment will be given 600 to 800 men for four months in cutting, following which about 250 men will be employed for from two to three months in hauling. The summer drive will occupy about 100 men.

Armand Berlinquette, 23, was suffocated beneath a pile of pulpwood at Hawkesbury last month. Nearly 100 workers of the International Paper Co. mill worked four hours to move the pile of pulpwood. Berlinquette was working on the pulpwood pile, about 30 feet high, when without warning a slide occurred. Nine other men leaped clear.

J. R. Booth, Ltd., of Ottawa, known from pioneer days in the paper, lumber and pulp industries, has announced the appointment of W. P. Bennett and Son, Toronto, as exclusive representatives in Ontario. The J. R. Booth company specializes in the manufacture of all grades of high class boxes.

Orville H. Moore, formerly general manager of the Hinde and Dauch Paper Co. of Canada, is bringing suit against the company for $65,000 damages claimed as for breach of contract, resultant from alleged wrongful dismissal. The issuance of proceedings has aroused much interest in the Canadian pulp and paper industry, of which the company in question, which operates two mills in Toronto and a mill in Trenton, is a prominent unit, while Mr. Moore, who had been associated with the company for many years, is a well-known figure in the industry.

Canadian Paperboard Co. has opened its pulp mill at Belleville. Working three shifts, this gives employment to some 35 men, or about four days' work for each man per week. The step has been taken with the object of helping out the unemployment situation, which is very acute in Belleville, and the company has been able to afford this very welcome assistance to the situation by reason of the easy terms on which it is getting power and wood.

The NEW MORSE ROLLER CHAIN

A REAL ADVANCE IN ROLLER CHAIN CONSTRUCTION

No effort or expense has been spared to produce this new Morse roller chain. Old principles of roller chain joint construction have been eliminated. More than 32 years of chain manufacturing experience is behind it.

Morse Roller Chains are designed to fit standard A. S. M. E. roller chain sprockets. Write for Bulletin No. R 50 describing these new Morse Roller Chains.

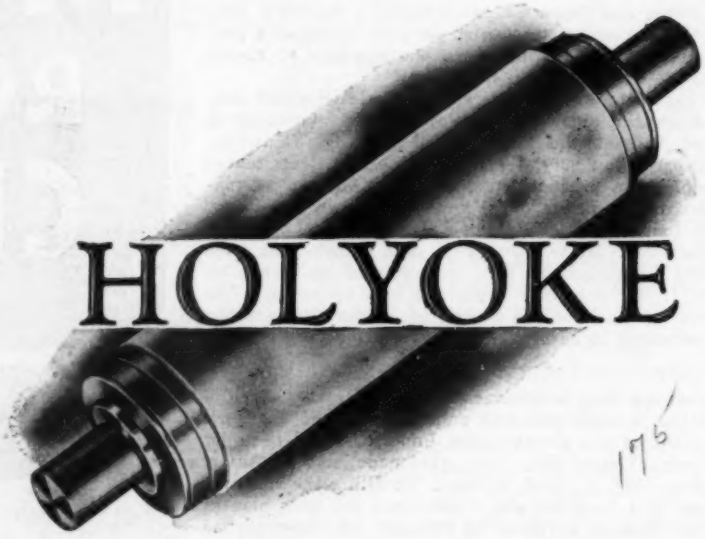
MORSE CHAIN COMPANY · ITHACA, N. Y.
Morse Chain Co., Ltd., Letchworth, Herts, Eng.
Branches in Principal Cities Division of Borg-Warner Corp.
Manufacturers of Morse Chain Drives, Flexible Couplings and Speed Reducers

MORSE CHAIN DRIVES | MORSE FLEXIBLE COUPLINGS

HEAT RESISTANT

PIONEERS SINCE 1863 IN THE MANUFACTURE OF PAPER MILL AND WOOD PULP MACHINERY

HOLYOKE Cotton and Paper Rolls are precision rolls. Not theoretically so—but actually. The result is a higher quality paper of whatever grade you are running, — uniform in finish throughout. HOLYOKE Engineering is the reason for HOLYOKE'S leadership for the past 65 years.



THE ability of HOLYOKE Rolls to resist friction heat and other heat to which they may be subjected tends to lengthen the life of the rolls as well as to produce a better surface on whatever grade of paper you may be running through your calenders. UNIFORMITY, RESILIENCY, LONG LIFE, and HEAT RESISTANCE—these four outstanding qualities of HOLYOKE Rolls are the result of HOLYOKE Engineering skill and leadership since 1863.

Write HOLYOKE MACHINE CO., HOLYOKE, MASS., Manufacturers of Super Calenders, Platers, Cotton and Paper Rolls, Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors.

The HOLYOKE MACHINE COMPANY

FOUNDED 1863

Campbell Wins Suit for Commission

Charles E. Campbell, Regina newspaper publisher, can finally collect $50,000 to which he was found entitled by the Privy Council, after years of litigation. The appeal of the National Trust Co., acting as executors of the late E. A. Wallberg, against whom Campbell brought action, from a judgment of Mr. Justice Wright dismissing a previous appeal against the writ of execution under which Campbell sought to obtain the money awarded, was dismissed last month at Osgoode Hall, Toronto, by the court presided over by Mr. Justice Mulock.

Campbell brought action years ago against Wallberg, claiming he was entitled to a commission of three per cent on a contract made by the Lake St. John Power and Paper Co., controlled by Wallberg, with the Newspaper and Magazine Corp. of New York.

A meeting of the directors of Interlake Tissue Mills Co., Ltd., was held at the head office of the company, in Toronto, on September 12, when the usual quarterly dividend of one and a half per cent, payable on September 30th, was declared, and routine business transacted.

On the evening of the 11th of September a fire took place at the mill of the Hinde and Dauch Paper Co. of Canada, Ltd., at Trenton, at which mill the company produces strawboard for corrugating purposes. The damages, estimated at about $12,000, were covered by insurance.

❖ NEW BRUNSWICK ❖

A five-day week has been introduced at the Dalhousie newsprint mill of International Paper Co. of New Brunswick. The reduction in working time was not accompanied by an official explanation. Immediately prior to the enforcement of the five-day week at the mill, the grinder room crews were ordered on a six-hour shift schedule, and two of the four paper machines were temporarily shut down.

❖ BRITISH COLUMBIA ❖

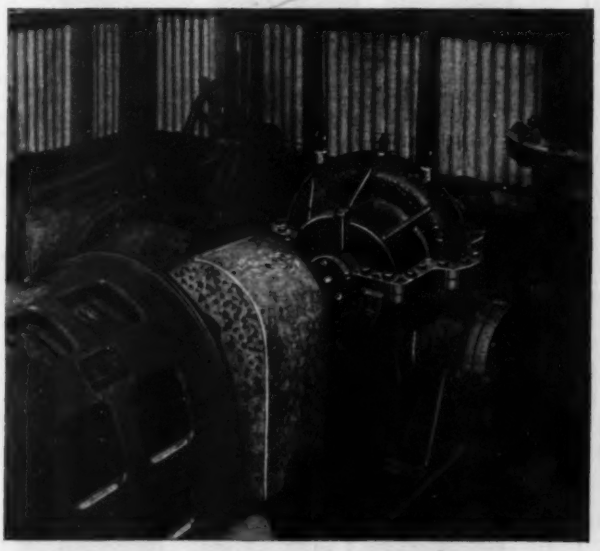
Tenders have been called for from Victoria architects for the construction of a manufacturing storage warehouse for the Sydney Roofing and Paper Co. on the Industrial Reserve in Victoria. According to R. W. Mayhew, president of the company, the warehouse building will be built of hollow tile and brick, and will measure approximately 80 by 40 feet, the roof being of the company's patent shingle material. The Sydney Roofing and Paper Co. has been engaged in the production of various paper products, felts, and shingles for a considerable number of years past. It also operates a branch at Vancouver.

The Elk River Timber Co. has donated 1,000 acres of logged-off land to the British Columbia Forestry Service for experiments in reforestation and scientific forestry management. The property is situated two miles south of Campbell River, on Vancouver Island, and is considered highly desirable for forestry purposes. As the first step in the experimental work which is planned, the forest service has planted the first unit of 17 acres with trees grown at the new Green Timbers forestry station near New Westminster.

Herb Re-elected President of Westminster

J. J. Herb was re-elected president and general manager of the Westminster Paper Co., Ltd., New Westminster, at the annual meeting of the firm which took place sometime ago in the company's offices. It is understood that a very satisfactory report was submitted, and all the shareholders

2,000 G.P.M. 4% Sulphite— with Double Suction "Buffalo" Stock Pump



You'll find Buffalo Paper Stock Pumps handling every kind of stock at consistencies up to 8% in some cases,—and handling it easily —and efficiently. The double suction pump shown here has the Buffalo Enclosed Impeller which provides unusually efficient service with very low maintenance costs. Let us give you the figures that users of Buffalo Stock Pumps give us—check them with your own costs.

Buffalo Pumps lower pumping costs.

Buffalo Pumps, Inc.
213 Mortimer St., Buffalo, N. Y.
In Canada: Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

"Buffalo" Stock Pumps
Non-Clogging
High Consistency

LUNKENHEIMER
ALL-IRON VALVES

SMALL ALL-IRON VALVES, SCREW OR FLANGE ENDS

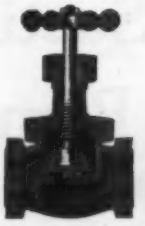


Fig. 1113—Globe
Fig. 1114—Angle
Iron Seat and Disc
Fig. 1461—Globe
Fig. 1462—Angle
Monel Seat and Disc
150 Pounds—450° F.
¼ to 2 inches

Fig. 1116
Horizontal Check
150 Pounds—450° F.
¼ to 2 inches

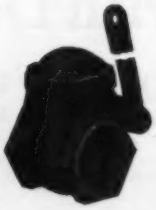


Fig. 322
Quick Operating
75 Pounds—450° F.
¼ to 3 inches

Fig. 1644—Screw Ends
Fig. 1645—Flange Ends
Gate—"King-clip"
Rising Steel Stem

Fig. 1683—Screw Ends
Fig. 1684—Flange Ends
Gate—"King-clip"
Outside Screw and Yoke

Fig. 1646—Screw Ends
Fig. 1647—Flange Ends
Gate—"King-clip"
Quick Operating

Screw Ends
¼ to 2 in. { 150 lb. W. S. P. 450° F. / 225 lb. G. L. P. 100° F.
2½ to 4 in. { 125 lb. W. S. P. 450° F. / 175 lb. G. L. P. 100° F.

Flange Ends
1½ to 4 in. { 125 lb. W. S. P. 450° F. / 175 lb. G. L. P. 100° F.

LARGE ALL-IRON VALVES, SCREW ENDS

Fig. 218—Globe
Fig. 219—Angle
125 Pounds—450° F.
2 to 6 inches

Fig. 1104—Horizontal Check
125 Pounds—450° F.
2 to 8 inches

Fig. 1457—Swing Check
125 Pounds—450° F.
2, 2½, 3, 4 inches
Renewable Side Plugs

Fig. 1575—Gate
125 Pounds—450° F.
Non-Rising Steel Stem
2 to 6 inches

Fig. 1577—Gate
125 Pounds—450° F.
Rising Steel Stem
Outside Screw and Yoke
2 to 6 inches

Fig. 1602—Gate
Quick Operating
2 to 3 inches—125 lb.
3½, 4, 5 and 6 in.—100 lb.

LARGE ALL-IRON VALVES, FLANGE ENDS

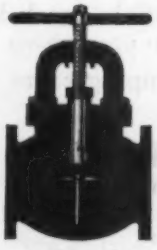


Fig. 618—Globe
Fig. 619—Angle
125 Pounds—450° F.
2 to 12 inches

Fig. 1106—Horizontal Check
125 Pounds—450° F.
2 to 8 inches

Fig. 1612—Swing Check
125 Pounds—450° F.
2, 2½, 3, 4 inches
Renewable Side Plugs

Fig. 1576—Gate
125 Pounds—450° F.
Non-Rising Steel Stem
2 to 6 inches

Fig. 1578—Gate
125 Pounds—450° F.
Rising Steel Stem
Outside Screw and Yoke
2 to 16 inches

Fig. 1603—Gate
Quick Operating
2 to 3 inches—125 lb.
3½, 4, 5 and 6 in.—100 lb.

(A reprint of a page in the Lunkenheimer "Guide" which illustrates a complete line of Valves and Engineering Appliances. Write for a copy.)

THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U. S. A.
NEW YORK CHICAGO BOSTON PHILADELPHIA
PITTSBURGH SAN FRANCISCO LONDON
EXPORT DEPT. 318-322 HUDSON ST., NEW YORK

BUY FROM THE LOCAL
LUNKENHEIMER DISTRIBUTOR

32-68-67

expressed their appreciation by re-electing the full slate of officers. The company's plant is operating steadily, and the paper machine and printing presses are running on a 24-hour-a-day basis. One or two other departments are also running two shifts, and all other employees are working on regular day shifts.

The annual report of the company for the year ended July 31 last showed profits of $21,335. The balance sheet indicated current assets of $167,128 (including inventories of $85,543) compared with current liabilities of $98,937. The directors announced the declaration of a four per cent stock dividend for immediate distribution. The statement covered the first year of operation after the plant had been closed down for 12 months following the destruction of the plant by fire.

The premises of the Westminster Paper Co. were recently inspected by members of the Advertising and Sales Bureau of the Vancouver Board of Trade. Prior to the inspection a luncheon was held in the Hotel Russell at New Westminster, where the Vancouver visitors were welcomed by Mayor A. Wells Gray on behalf of the city, and Archie Hogg, president of the New Westminster Board of Trade, and E. M. Herb, assistant manager of the paper company, who did the honors on behalf of his firm.

Frank J. D. Barnjum, of Montreal and Annapolis, N. S., completed last month the purchase of another virgin tract of "big trees" in the Sahtlam district of Vancouver Island, in order to prevent their being sacrificed to the axe. This is the second tract purchased by Mr. Barnjum and the fourth tract purchased by him and his friends.

◆ MANITOBA ◆

Pine Falls Mill Will Be Closed

Notice was received at Pine Falls on September 30 from the Toronto office of the Abitibi Power and Paper Co. that the Pine Falls Division, operating under the name of Manitoba Paper Co., will close down temporarily as soon as the present supply of pulpwood on hand has been exhausted. It is estimated that this will not occur until late next spring.

The Pine Falls mill has been operating full time while a number of other mills operated by Abitibi have closed down at intervals. It is the desire of the company officials to use up wood accumulated at mills that have been closed down, before it deteriorates.

◆ NEW ENGLAND ◆

A New Transportation Service

One of the outstanding developments at the meeting of the New England Shippers Advisory Board held at the Hotel Griswold, New London, Conn., September 18, was the suggestion of a new transportation service by C. L. Whittemore, traffic manager of the New England Paper and Pulp Traffic Association, and the report on Freight Claim Prevention by Andrew P. Lane, traffic manager of the Great Northern Paper Co. The suggestion of Mr. Whittemore may revolutionize transportation methods for if his proposal, which in brief involves a new service between carload and less carload, new rates and delivery of goods to the consignee, and if successful in New England, is bound to spread everywhere.

Mr. Whittemore, New England traffic authority connected with the paper industry for many years, with experience as president of the Pulp and Paper Traffic League, and scores of successful combats with the roads to his credit, was elected chairman of the Pulp and Paper Committee of the New England Shippers' Advisory Board to succeed the late P. J. Dowd, manager of the Holyoke Traffic Bureau. Nat F. Bartlett, new vice-chairman is Hollingsworth & Vose traffic manager. The

RYERSON

IMMEDIATE STEEL FOR MAINTENANCE AND REPAIR

When something breaks . . . and steel is needed in a hurry . . . you can depend upon Ryerson for quick action. Complete stocks of all steel products, including:

Bars	Wire	Babbitt Metal
Shapes	Chain	Tool Steel
Structurals	Turnbuckles	Bar Iron
Rails	Shafting	Refined Iron
Plates	Boiler Tubes	Floor Plates
Sheets	Boiler Fittings	Safety Treads
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Write for the Journal and Stock List — the "key" to Immediate Steel.

JOSEPH T. RYERSON & SON INC.

Chicago Milwaukee St. Louis Cincinnati Detroit
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STEEL

PICKERING 1862 · 1931

Like a Chain

the efficiency of an Engine is no greater than its weakest link.

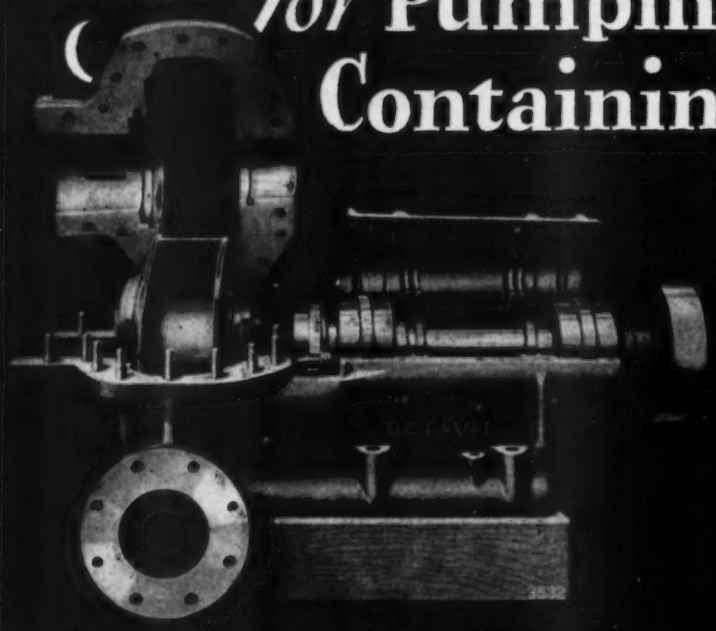
The Governor is the deciding factor in its power development and responsiveness.

The "Pickering" is recognized for these essential characteristics.

The Pickering Governor Co.,
Portland, Conn.

PICKERING GOVERNORS

for Pumping Liquids Containing Solids



THE DE LAVAL CLOGLESS PUMP, for handling liquids containing solids in suspension, is economical of power and is of the most durable construction.

Clear water seals on the running joints prevent cutting out by abrasive solids. A hand hole on the suction nozzle permits of inspection and cleaning without lifting the cover.

The horizontally split casing makes all internal parts accessible without disconnecting piping.

Impeller and casing are protected from wear by renewable sealing rings, and the shaft sleeve is easily renewable, as all parts are made to limit gages and are interchangeable.

Short overhang of impeller and large size ball bearings, spaced well apart, eliminate vibration.

Ask for Catalog B-1.

De Laval Steam Turbine Co..
Trenton, N. J.

Savings $ $

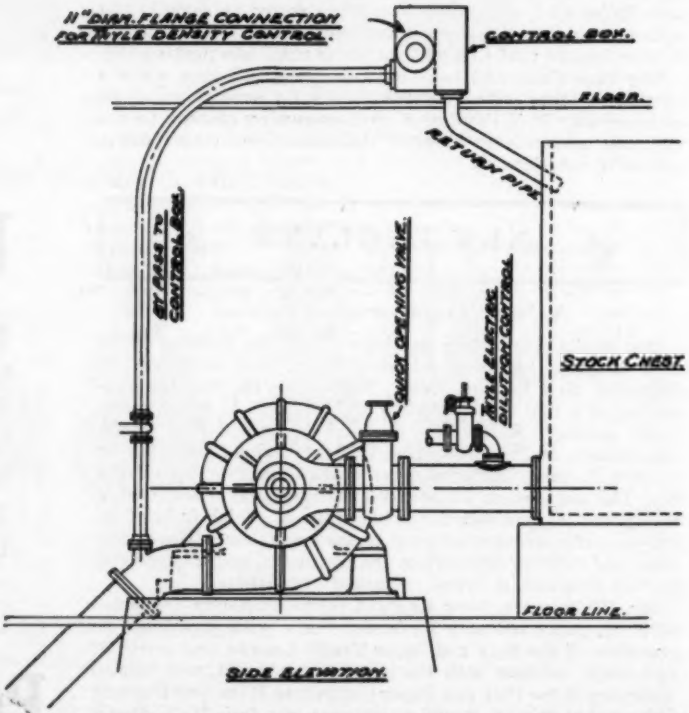
Greater efficiency of bleaching engines and jordans, plus a saving in chemicals. A uniform weight and caliper are but a few of the economies obtained with the Thyle Consistency Control Unit—and, it is easily installed requiring only a couple of pipe fittings and a few hours of time.

If you wish to control your stock automatically and increase the efficiency of your mill, write or wire for Bulletin No. 50.

Thyle Machinery Company

"Specializing in Pulp Control"

514 Bryant St. San Francisco, Cal.



The above is a diagram of the installation referred to in our advertisement which appeared in the September, 1931 issue of this publication. Note the simplicity of installation.

chairman immediately questioned some 75 New England paper and pulp mills as to their rail service, and invited suggestions for betterment. Pickup and delivery were the only suggestions which he has received. He proposes that the railroads shall establish a special carload minimum on paper of 6,000 or 8,000 pounds. Rates below the less carload and above the carload shall be worked out. Trucks to be used at terminals for delivery to consignees' doors to be the American Railway Express units located in every city and town. Rates to cover rail and truck transportation. Service to include direct shipment of the special quantities under seal to city destinations.

Pointing out that paper was being trucked from northern New England and Maine to Boston, that 1,000 cars of paper and waste paper were diverted by Kalamazoo district mills from rails to trucks over a period of 11 weeks, that trucks were constantly increasing their paper tonnage, he stated that only some service other than that now offered would suffice to bring back the business.

That his suggestions are to receive serious consideration is seen in the fact that on October 15 a committee representing shippers in all leading lines of New England industry and all New England carriers will meet at the South Station or the American Railway Association Car Service division rooms in Boston to consider the suggestion and work it out.

Mr. Whittemore urges that the suggestion be given a fair trial; and that if considered at all feasible, trial be made between points where known support will come from papermakers. That the railroads are ready to accord many things to get traffic from the trucks is seen as rate slashing from $1.20 to 75¢ on coal, Boston to Lawrence and Lowell, and from $1.20 to 90¢ Boston to Haverhill, incidentally affecting three papermakers. This was due to the increase in trucking, Boston to the cities named.

In reporting for the Freight Claim Prevention Committee, Mr. Lane touched on many subjects, notably newsprint. In the loading of newsprint paper he said, the load in each end of the car is strapped with steel or wire, making two solid units, each weighing 12 to 15 tons. Each unit is then blocked or braced. Frequently the inspection at destination shows that these heavy units have been moved a distance of 12 to 18 inches from the position they occupied on the car floor at shipping point. A proper use of impact recorders would quickly determine the point at which the rough handling occurred. It is this refusal of the carriers particularly those beyond the New England lines to co-operate in the maintenance of these impact recorders. Where co-operation has been obtained remarkable results in damage prevention have resulted. Wonderful assistance has been given by the Southern Railway, whose Mr. Gatchell has caused a pamphlet to be sent to every publisher in the South and Southwest showing how paper is loaded and how it should be unloaded and by this a remarkable reduction in damage claims has occurred. Railroad co-operation is needed further in other sections to trace the car shocks in switching, classification yards and on curves which cause much of the damage, and to correct the causes.

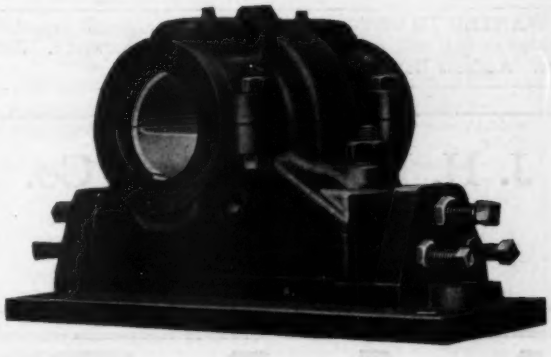
Mr. Gatchell, of the Southern Railway, visited the Great Northern Paper Co.'s Millinocket mills, learned how newsprint is loaded and braced, and his information as to correct handling was carried south so that in unloading from cars to trucks or cars to storage, bruising the rolls was eliminated. "It is the most difficult package to handle without damage," said Mr. Gatchell, referring to newsprint.

Commenting on the Whittemore new service proposal, Mr. Gatchell said: "Let anybody on my line produce an 8,000 pound paper shipment and I will move it through direct to destination under original seals."

An airplane has been bought by the Fitchburg Paper Co., of Fitchburg, Mass., and will be used to transport the company's officials between Fitchburg and New York, Philadelphia, Cleveland and Chicago, where branch offices are maintained.

Charles E. Hathaway, connected with the Great Northern Paper Co., at Millinocket died suddenly at St. Andrews, N. B.,

Collar Oiling Pillow Blocks



For Paper Mills, Pulp Mills or any Plant where Line Shaft Service is Severe and Lubrication a Problem

These rigid Pillow Blocks are big and strong, lined with a good grade of babbitt bored to shaft size. This insures a perfect fit; and the COLLAR OILING feature guarantees a copious supply of oil reaching the top of bearing where it is directed over the full length of shaft through specially designed oil channels. They may be had with or without base plates.

Manufactured by

T. B. Wood's Sons Co., Chambersburg, Pa.

New England Branch: Cambridge, Mass.
Southern Branch: Greenville, S. C.

Makers of all types of Pillow Blocks, Hangers, Couplings, Shafting, Taper Cone Pulleys, Beater Pulleys, Friction Clutches, Belt Contactors for Short Center Drives, Floor Stands, Flexible Couplings and Genuine Tex-Rope Drives.

Ask for copy of catalog No. 70

WANTED TO BUY—A used 50 inch sheet coating machine, belt driven. Address Box 199, The Paper Industry.

WANTED TO BUY—Used laboratory equipment especially beater or ball mill or items for a complete laboratory. Send list. Address Box 200, The Paper Industry.

CHEMIPULP
TURNS DIGESTER WASTES INTO PROFITS
CHEMIPULP PROCESS, INC., WATERTOWN, N. Y.
PROCESS

J. H. Horne & Sons Co.
Paper Making Machinery
LAWRENCE, MASS., U. S. A.

VEST POCKET POWER PLANTS
Small space occupied, any capacity, low over-all operating costs, high and extreme efficiencies, reliability, low initial investment.
Complete power plants to meet any operating conditions of Pulp and Paper mills or other Industrial service, Engineering and Construction.
Satisfactory Services Always Guaranteed.
FERGUSON ENGINEERS
Power Specialists
Monadnock Bldg., Chicago

MARIS BROS. INC. 5530 GRAYS AVE., PHILADELPHIA.
CRANES Electric RELIABLE & Hand **HOISTS**

Lessons in Paper Making

By Harry Williamson

One of the greatest funds of information on paper making ever published for the mill man.

Part I contains the first twelve lessons and two separate articles—A Problem in Head Box Control and The Degree of Hydration.

Part II contains fourteen lessons and one separate article—Safety Practice in Machine Room. Price 50¢ each.

Practical Helps for the Mill Man

A 48-page pamphlet made up of practical helps, many of which have meant considerable savings in paper and pulp mills. Of tremendous value to the practical man. Price 50c.

THE PAPER INDUSTRY
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ATTENTION!

Managers, Superintendents, Technologists

Increase Your Profits!

New bleaching process for Sulphite, Groundwood, Sulphate, Jute and Straw.

Also processes for—
De-Inking
De-Waxing
De-Asphalting
Elimination of Pitch
Chemical Hydration of Fibers

Address all inquiries
Box 184 - - - The Paper Industry

recently. He had long been active in shipbuilding, and was for years assistant treasurer of Fore River Shipbuilding Co., at Quincy, Mass.

A. W. P. to Co-operate with Distributors

Distributors for the American Writing Paper Co., everywhere should be pleased at the remarks made by officials of the producing company at a meeting with the sales and executive force of Carter Rice & Co., Boston, leading New England merchants. The meeting was held at the Boston Chamber of Commerce Friday evening, September 11. President S. L. Willson, described A.W.P. Co.'s history, its organization, development difficulties, remarkable comeback since reorganization, praised his many loyal and capable executives.

Russell Madden, vice-president and manager of sales, discussed policies. American will work closer than ever with distributors; regular merchants will always have first call, mill inquiries will always go to merchants, outside merchants will not be allowed to undersell regular distributors with unwatermarked or private brand lines. Advertising Manager McDougall discussed the extensive publicity and promotion work on Contract, Acceptance and Coupon Bond, and on Herculean Cover.

Strathmore Paper Co., West Springfield, Mass., is understood to have plans ready for the erection of a two-story addition to its mill which will cost about $55,000 with machinery.

McLaurin Jones Co., Brookfield, Mass., manufacturers of ground and coated papers are doing extensive direct mill promotion work on their "Waregold" and "Wareplatinum" lines. The stock is being pushed in particular as a field for the advertisement of articles made of metals. Stock is made in regular and extra heavy weights, white one side and metal both sides. There is also a wide range of other purposes to which the stock has been converted such as label, greeting card and post card purposes.

Two new Babcock and Wilcox Co., steam boilers to operate at 22 per cent of rating are being installed in the power plant of Tileston & Hollingsworth Co., at its Boston mill. Two type F Combustion Engineering Co., stokers, which have been in the plant for sometime, are being rebuilt in the shops of the equipment maker and will be reinstalled.

Simonds Saw & Steel Co., manufacturer of all types of knives and cutting equipment included that used by the paper trade, have completed its new model windowless factory in Fitchburg, Mass. When business conditions warrant, it will be operated, but at present the old plant is being used.

In the case of the George W. Wheelwright, Paper Co., receivers have been authorized by the Superior Court, Boston, to sue the State of Massachusetts for damages which are alleged to have resulted from diversion of water from the Ware River for benefit of the Boston water system. The taxes on the Leominster plant threatened a tax sale but the collector was enjoined by the Court from proceeding with such a sale. Receivers have also assured the trade that production will be continued and that there is no reason whatever to believe that it will be terminated by court order at the end of the year as was first reported.

Important price changes were announced in Boston on both paper and raw materials. Standard soda pulp, which for months has been selling at 3¢ delivered mill, has been reduced $5 per ton to 2.75¢ delivered. A tonnage of unsold west coast bleached sulphite on the docks at New England ports is being cleaned up at 2.35-2.50¢ dock to make way for new and improved pulp to follow, according to report. Northern kraft manufacturers reduced the price of kraft paper to 3.50¢ following cut in the delivered Boston price of southern kraft to 3.25¢. New England waxed papermaker cut his price on basis 24 x 36 to $1.20 in conformity with the easing in tissue lines.

2 things to insist on!

HERE are two reasonable demands you can make of the detergent you use for felt washing. First, that it removes every bit of dirt, grease and foreign matter, and second, that it is non-injurious to the felt fibres.

Both these requirements are fully met by Oakite. Its effective cleansing action leaves felts soft, clean and absorbent. The fibre is not harmed in the least. That is why Oakite users enjoy longer life from their felts.

Your free copy of booklet describing modern methods of felt washing and other paper mill cleaning operations, is waiting to be mailed. Write for it today. No obligation.

Oakite Service Men, cleaning specialists, are located in the leading industrial centers of the United States and Canada

Manufactured only by
OAKITE PRODUCTS, INC., 16A Thames St., NEW YORK, N.Y.

OAKITE
TRADE MARK REG. U.S. PAT. OFF.
Industrial Cleaning Materials and Methods

TANKS

that are engineered to Fit

For almost 75 years, Graver has served the industries which represent the largest users of tanks. From small, welded tanks to the largest field-erected storage equipment—Graver builds all kinds and sizes. Graver engineering has kept pace with industrial development. Whether you need standard tanks or equipment specially fabricated to unusual specifications, there's an assurance that Graver experience will produce an "engineered" product. Our engineering service is yours for the asking.

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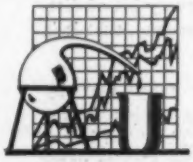

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Nut and slack West Virginia coal dropped to $4.00-$4.15 on cars Boston, the lowest price since prior to the war. Mixed paper advanced $1 to $5 on cars; news was up $2 at $6.50-$7.50 on cars.

One of the paper companies incorporated in Massachusetts recently is Harry M. Cranmer Co., Inc., of 161 Devonshire street, Boston, handler of specialty papers and box cover lines. H. M. Cranmer is president and treasurer and Martin Van Dunning, Jr., vice-president.

Bruynhall, Inc., of Springfield, Mass., has been chartered to manufacture and deal in decorative papers, cards, etc., with capital of $50,000. The president is Gertrude V. Bruyn, treasurer, Alice L. Halligan.

Merrimac Chemical Co., has practically completed erection of its new building which will be ready for occupancy this month, in which alum will be produced.

C. H. Smith Corporation, West Springfield, Mass., are making the largest standard dandy rolls used and have installed a new special lathe for the purpose. The company is understood to have exclusive manufacturing rights on a rigid removable cover for dandy rolls invented by Walter G. Trotman. This device is claimed to cut watermarking expense in half.

Carload shipments of paper may be stopped off at Bellows Falls for waxing by a provision to be inserted in the tariff according to the New England Freight Association, said shipments originating in Madison, Me., where the Great Northern Paper Co., makes specialties including stock for waxing.

Other traffic changes include a reduction in the carload rate on wrapping paper from East Walpole, Mass., to Framingham. Carload minimum is 36,000 pounds. It is proposed to reduce to 10.50¢ from 13.50¢ plus the switching charge. Envelopes from Worcester and Springfield will be reduced in carload minimum required from 24,000 to 20,000, rates the same to New York City to obtain back to the roads business now going by truck. Pulp from Groveton to Northumberland, N. H., will be cut from 6.50¢ to 4¢, also to get back from trucks tonnage the railroad much desires.

C. Frank Young, 31 years with Oxford Paper Co., Rumford, Me., and manager of the transportation department has been retired. He began his paper company experiences with S. D. Warren Co. Chester W. Alden succeeds Mr. Young.

H. F. Webber, manager of the Waterville Iron Works, Waterville, Me., widely known for his many developments in the equipment for pulp mill wood rooms, died September 9 after a long illness.

According to a decision of the Massachusetts Supreme Court in the case of Holyoke Water Power Co. vs. Whiting & Co., it has been decreed that the water in the canals at Holyoke can only be used for power making, not for other manufacturing purposes. This important decision upsets long custom and it is expected it will go back to the courts on the grounds of long usage. The power company is not required to set up a trust fund for rentals of mill powers for the maintenance of the dam and the canal system. In addition it was ruled that the paper companies cannot legally use mill powers on other parcels of lands to which the specified mill powers are not appurtenances.

Sullivan Machinery Company has appointed Jonathan A. Noyes, formerly Duluth manager, as manager of the company's coal machinery sales division with headquarters at the general offices in Chicago. Leon J. Cone has been made district manager at Duluth.

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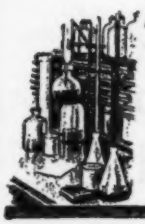
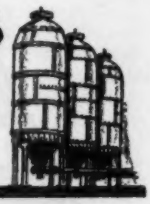


Technical Developments in the Paper Industry



Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

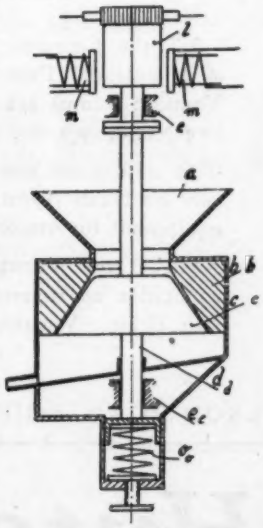
Manufacture of Pulp

GASES are evolved from the digestion liquor during the course of the digestion of pulp, particularly of the digestion of sulphite pulp. These gases collect in the upper part of the digester. In order that these gases are not able to increase the pressure within the digester to too high a point, they are removed from the apparatus either continuously or intermittently. They are, of course, recovered and utilized as far as possible in apparatus located externally of the digester. This practice results in the first place in losses of chemical in the digestion operation; in the second place these gases are not evolved in a regular manner and hence cannot be removed in a regular manner, or with such a degree of the same that the pressure within the digester remains constant. The variations in the pressure within the digester has the effect of producing a stock which is irregular to a certain degree in its separate parts.

In order to avoid these difficulties, the highest point in the digester is kept cold in accordance with this invention, that is the point at which the stock is introduced into the apparatus. This has the effect that the gases, which are evolved during the digestion period in the hottest part of the digester and which rise and enter the cold portion at the top, are absorbed in the liquor again in this cold part. It is advisable to keep the liquor and optionally both the liquor and the stock in constant circulation through the digester, so that the highest point in the apparatus is not heated too much by the rising gases. Metallgesellschaft A.G., Frankfurt am Main, Germany. German Patent No. 526,835.

Wood Grinder with Automatic Adjustment

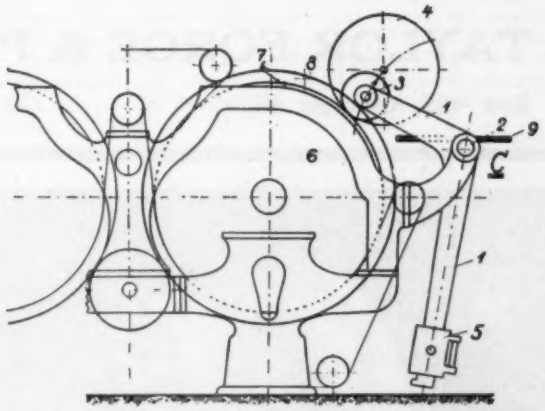
THE object of this patent is to avoid obstructions in wood grinders that are electrically driven and are provided with conical grinding surfaces. Use is made of the fact that, when an obstruction occurs, the grinder must consume more electric power in order to overcome the same, and this demand for more power has a corresponding effect in the electric motor, which pulls more current from the line or in which the strength of the field is increased. This condition can be made use of in causing the space between the grinding bodies to increase in size by axial movement of the shaft of the grinder.



The product that is to be ground is mixed with water and fed into the machine shown in the accompanying illustration through the funnel feeding device (a) and flows through the annular conical space between the two grinding surfaces (b) and (c). The shaft (d) which carries the grinder (c) and which is journaled at (e) is located in a thrust bearing at its lower end, which bearing is provided with the adjustable spring (o). The driving motor is directly coupled to the shaft (d) at the upper end of the same and is shown at (1). The armature of the motor is located above the field (m), so that the armature has the tendency on increasing line strength or field current strength to be pulled down towards the field against the resistance of the spring (o). This has the effect of making the space between the grinding bodies (c) and (b) greater and thus avoids the clogging up of the machine. Magnet-Werk G.m.b.H., Eisenach, Germany. German Patent No. 522,842.

Simple Apparatus for Rolling Up Paper

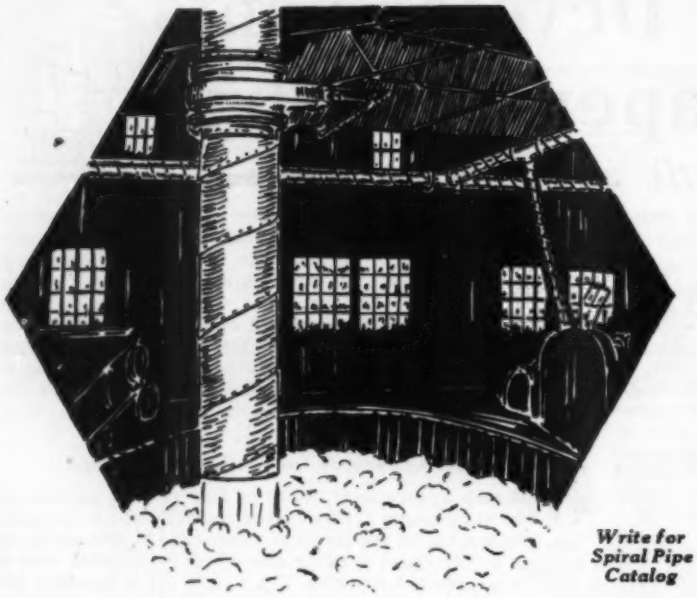
ONE such apparatus is shown in Fig. (1). It consists of two angle levers (1) which are rotatable about the point (2). The bearing of the levers is located at (3) and serves to take on a four edged winding core which is provided with a wood or paperboard covering. The weight (5) is provided for



the purpose of applying a regulatable pressure of the winding core on the drying cylinders. The application of the paper web on the winding core takes place in very simple manner in that the latter is moistened with water the moment that the paper web leaves the drying cylinder and passes to the winding device. The dry paper web remains adherent to the wet wood or paperboard core. As the size of the roll of paper increases, the lever (1) pushes away from the drying cylinder in the direction of the arrow. When the roll attains a diameter of the size shown at the point (4), then it is removed. The change of the rolls takes place very quickly. Wochenblatt fuer Papierfabrikation, 1931, page 573.

Digestion Process for Pulp

THIS process was recently discussed at a meeting of the Verein Deutsche Chemiker. It consists in heating the wood for a period of two hours with 40 per cent of a solution of alcohol of 180 deg. It is claimed that this treatment will result in a yield of 52.4 per cent of pulp from beechwood. It was also stated that when the process was carried out for four hours with 50 per cent alcohol, a yield of 50 per cent, based on the dry weight of the wood was obtained. It was also stated that the wood pulp obtained in this manner contained only the slightest traces of lignin and pentosans, furthermore, that it was only slightly colored and very easy to bleach. The tests were made with sawdust, but it is claimed that wood chips from the aspen, beech, pine and fir



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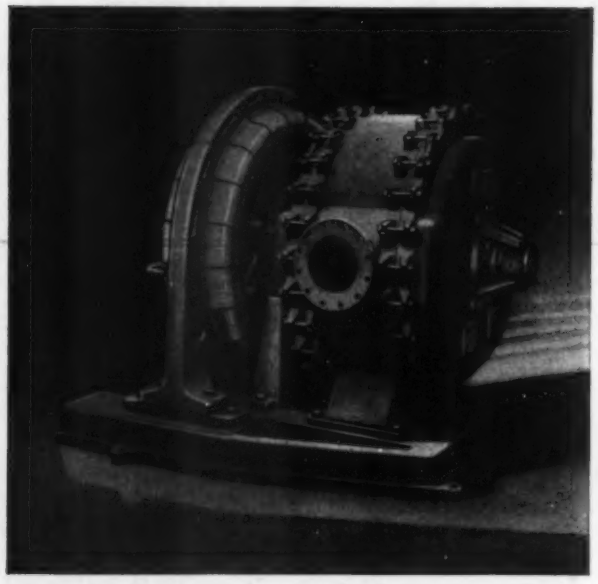

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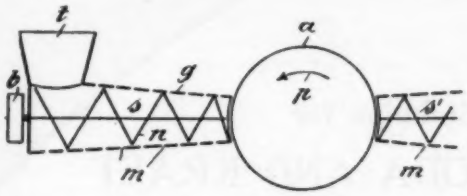
can also be digested in similar manner with good results. Dr. R. Kleinert and K. von Tayenthal, Zeitschrift fuer angewandte Chemie, 1931, number 23.

Grinding Wood

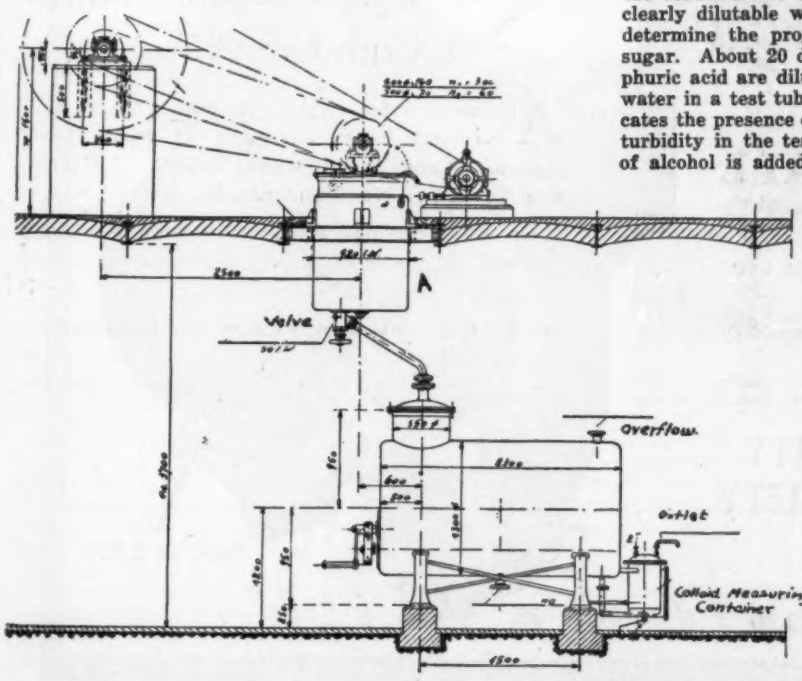
IN accordance with the new invention, a gradually rising pressure is applied against the logs of wood as they are fed against the grindstone, but the logs are simultaneously dehydrated during the application of the pressure. This improves the grinding operation to a considerable extent and



reduces the operating losses as well. The figure shows an arrangement for carrying out the process. The grindstone is shown at (a), which rotates in the direction shown by the arrow (p). The housing (g) of the screw press (s) opens out at the circumference of the stone (a). The housing is conical in shape with the short end towards the stone (a) and is provided with openings (m). A pressure screw (n) is located in the inside and a filling funnel (t) is located at the upper end. The driving pulley (b) is located on the outside and is directly connected with the screw press. As the number of revolutions of the screw increases, the pressure that it exerts increases. The material that is filled into the apparatus through the funnel (t) is carried through the conical screw (n) under pressure on its way to the grindstone (a). The liquid that is contained in the stock is removed from it during the course of this passage and this liquid flows out of the apparatus through the openings (g). Dr. Emil Geminder, Reutlingen, Germany. German Patent No. 523,560.

Dispersing Rosin for Sizing Pulp

THE article is concerned with a new process for producing rosin milk, which is known as the Bewoid process. The apparatus, which is used in this process, is shown in the accompanying illustration. The process is characterized as



a mechanical-colloid-chemical dispersing of molten rosin in an aqueous solution of a protective colloid, and emulsion former with the exclusion of soap, the operation taking place in a disperser of special construction. This process is effected with the aid of an agitating arrangement running at 200-300 r.p.m. and having the capacity of dispersing 200 kilograms of rosin in approximately 20 minutes entailing a consumption of 15 kw. of electricity. The disperser is not a colloid mill and yields dispersions, whose color varies from pure white to yellow depending on the grade of rosin used.

The dispersing apparatus is shown in the illustration at (A). It is filled with pieces of rosin and heated with superheated steam. As soon as all of the rosin is melted, dispersing starts to take place. The product is then run off into a storage tank which is large enough to hold enough material for 24 to 48 hours demand. The dispersed mass can be used at once, and the storage tank is connected with the beater so that the contents of the former may be run into the latter. A measuring device is also provided on the line, so that the proper weight of the rosin size may be measured out.

The article is also concerned with a discussion of the results obtained by this process and of the theories and practice of rosin sizing. Dr. Bruno Wieger Wochenblatt fuer Papierfabrikation, 1931, pages 626 to 628.

Making Sulphate Cellulose and Soda Cellulose

RESINOUS wood shavings are treated for the recovery of the byproducts in such a manner that the volatilization of the turpentine by steam and extraction of the resin by alkali are carried out in different zones of the same digester. The hot lye saturated with resin soap is sprayed into an equivalent quantity of acid vapor or mist, and is afterwards treated with turpentine vapor or mist, the mixture being condensed rapidly and the solution of resin in turpentine decanted from the liquor and lignin. The leached shavings are washed and digested by one of the above processes to yield pulp. A. F. Zennstroem, British Patent No. 350,491, filed May 13, 1929.

Determination of Lignin in Pulp

THE various indirect and direct methods for the determination of lignin in pulp were examined and a number of them were studied experimentally. The conditions of the saccharification of the cellulose were also studied. It was pointed out that an essential disadvantage of all of the methods used up to the present time has been that there is no correct picture available of complete saccharification of the cellulose. It does not suffice that a reaction mixture is clearly dilutable with water. The author outlines a test to determine the progress of the conversion of cellulose into sugar. About 20 drops of the reaction mass containing sulphuric acid are diluted with one to two cubic centimeters of water in a test tube. Marked turbidity or precipitation indicates the presence of hydrocellulose. If there is only a slight turbidity in the test tube, then about 20 times the quantity of alcohol is added and the mixture shaken. The slightest trace of dextrin in the mass will then be easily recognized by the formation of white flakes. If no dextrin is present, saccharification is complete.

The filtration is an important part of the analytical process. The following method can be used and avoids the use of a suction flask in the operation. Three grams of bleached pulp and one gram of the unbleached pulp, based on the weight of the pulp dried at a temperature of 100 degrees C., are weighed out in a small beaker of 100 cc. capacity. The pulp is pressed down to form a compact mass with a suitable tool, such as a glass rod, as this will prevent loss of sample from the dusty powder. The cake obtained in this manner is then treated with five cc. of pure dimethylanilin, which is poured over it, and then with 25 cc. of 78 per cent concentrated sulphuric acid. The saccharification of the

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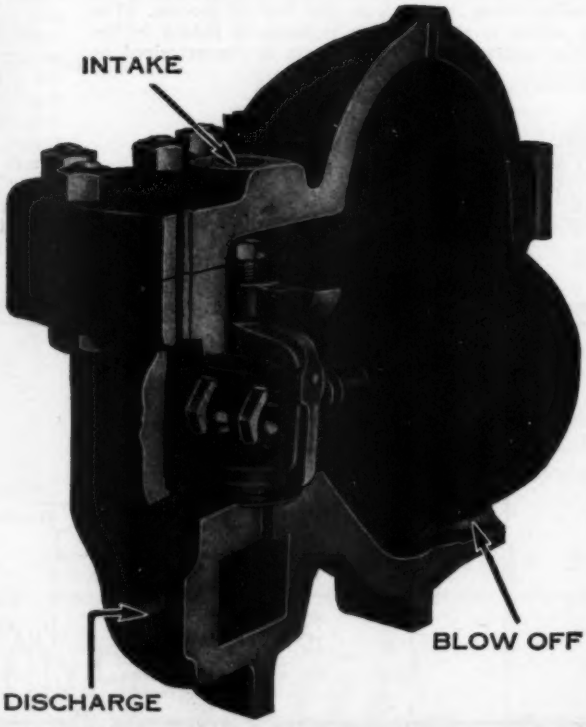
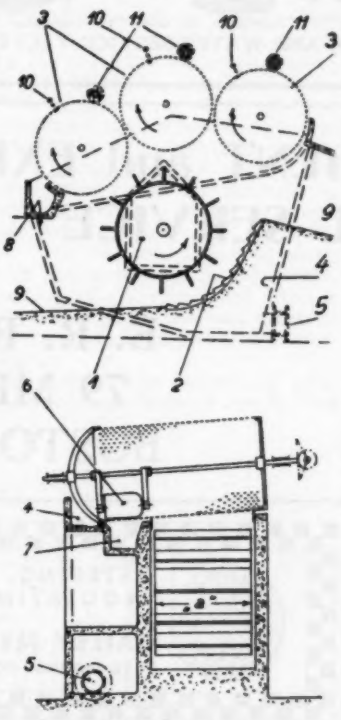


cellulose begins at once and is finished within a few minutes after the mass has been stirred around several times with a glass rod. When it is sure that no dextrin is contained in the mass, the latter is poured into 200 cc. of hot water and boiled for about five minutes. The lignin is thereby converted into brownish flakes which are easy to filter, the latter operation being carried out after the mass has been allowed to settle for about ten minutes on the water bath. Dr. A. Noll. Zellstoff und Papier, 1931, pages 409-411.

Mixing Beater

THE apparatus is shown in the accompanying illustration. The disintegrated and mixed paper stock is centrifuged by the tearing, carrying and centrifuging roller (1) along the back-fall (2), which has a serrated surface and into the part (a) against a group of finely or coarsely meshed screen surfaced or slotted screening drums, (3) which are rotated either rapidly or slowly. The stock is thus forced into the interior of these screening drums and due to the rotating motion of these drums and their oblique positions, the stock moves down to the lever ends of these drums. The result is that the stock, which does not slide up walls of the screening drums, is strongly and almost uniformly dehydrated. The result is that it contains anywhere from six to eight per cent water when it falls into the stuff chest (4), to be sucked through the short lengths of pipe (5) by means of a pump and removed for further processing.



A still further thickening of the stock, which enters the screening drums (3)—and this can even reach a density of 12 per cent, is possible with this apparatus, in which a quetsch roll (6) operates outside the part (a) and within the correspondingly longer screening drum (3). This roll presses out the water which is retained in the stock and removes the water through the finer screening drum openings located along the length of the quetsch roll (6) into the water channel (7) and conducts it back again to the beater (9). The spray pipe (10) and the brush rolls (11) are provided for the purpose of keeping the perforations or slots in the screening drums (3) clean and free from obstructions. Anton D. J. Kuhn, Bad Liebenwerda, Germany. German Patent No. 524,234.

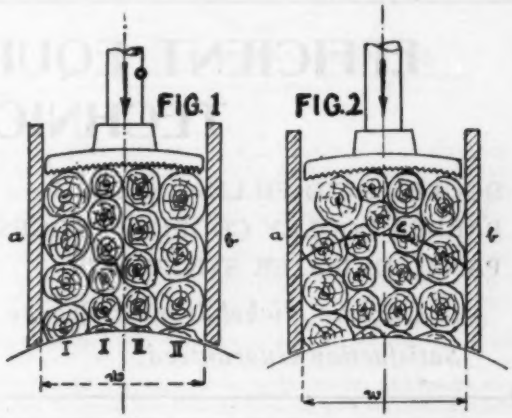
High Quality Half-Stuff

THIS patent is concerned with a process for making high quality halfstuff from various spinning waste, flax, hemp straw, jute and the like by means of a digestion liquor consisting of monosulphites and bisulphites. Neutral salts are also added to the digestion liquor and the digestion is carried out at a high temperature and under pressure. In order to be able to obtain a good product under these conditions, it is necessary to take special care to proportion the ingredients of the digestion liquor in the proper manner. It has been found that when the ratio of sodium bisulphite to sodium sulphite is as 3.0 to 3.5 to one, uncommonly favorable results are obtained. Due to the fact that the difficult solubility of sulphites and bisulphites of the alkaline earths makes it hard to prepare a liquor of this composition, alkalies are added, that is salts of the alkalies, and this results of course in the partial replacement of a certain quantity of alkaline earth metals in the sulphites and bisulphites. This does not matter however as long as the above ratio is maintained. Dr. Hermann Wenzyl Osnabrueck, Germany. German Patent No. 524,298.

Critical Studies on Grinding Wood

THE author considers the pressing of the wood against the grindstone during the grinding process. Fig. (1) clearly shows the correct way in which the logs should lay in the grinder pocket so that the grinding operation proceeds in a normal manner. Fig. (2) shows the bridging of the wood in the pocket and interference with the grinding. The reasons for the formation of these bridges and the relation between this phenomenon and the design of the grinder are discussed in the article. Various fundamental rules for designing the pockets of the grinder are formulated.

The author also discusses the character of the wood and the relation between the age, source, condition of the wood,



time of cutting, etc., and the quality and quantity of pulp obtained. A detailed study was also made of the use of spray and dilution water, of the qualities of the grindstone, the sharpness of the grinding surface and the circumferential speed of the stone and the product obtained. The testing of the mechanical wood produced is also studied. Otto Herdey, Zellstoff und Papier, 1931, pages 350 to 353.

Bleaching Maritime Pine Pulp

EXPERIMENTS were carried out on bleaching pulp which was obtained from the maritime pine. These pulps were obtained by treating the wood with 24 to 36 per cent sodium hydroxide, figured on the weight of the wood. The digestion lasted for six hours at a pressure of seven kilograms per square centimeter. The effects of time and of concentration of the bleaching solution on these pulps were determined and tabulated. J. L. Lussard, Bulletin Inst. Pine, year 1931, pages 17 to 21; 37.

Pulp from Old Newsprint

A SUITABLE solvent for treating old newsprint for conversion into paper pulp is causticization muds obtained as a by product in the causticization of sodium carbonate. This mud contains quite a number of chemical and particularly calcium silicate and other silicates. The colloidal character of these chemicals is of material aid in dissolving out the printing ink on the newsprint. Furthermore, the elimination of the ink is also facilitated by the presence of suspensions of other salts of lime. Magnesium hydroxide is also a very effective reagent for removing the printing ink from paper. The patent specifies methods of obtaining this chemical from residual causticization liquors.

It was also found that the effectiveness of the causticization mud or liquid which is used in this process may be very materially enhanced by the addition of suspensions of salts of the alkaline earth metals of colloidal character.

The following is an example of how this process may be carried out. A certain quantity of old newsprint is ground

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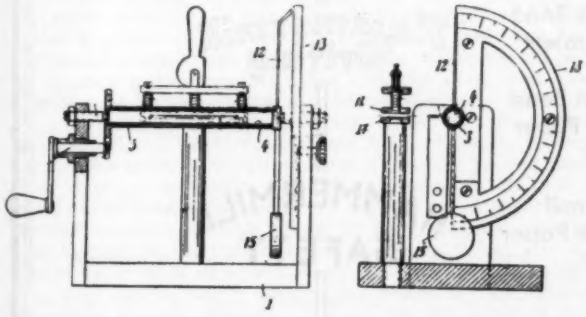
up in suitable manner and beaten in a beater of usual type for this purpose. The solvent should be added during the defibrination process, or else when the latter has been finished. The solvent and the mass that is being treated must be kept in intimate admixture by constant circulation of the product in the beater. The amount of solvent required for 1,000 kilograms of old newsprint and the like is about 80 liters of the residual liquor from treating carnallite mixed with 120 liters of the causticization mud solvent, the quantities naturally varying according to the nature of the paper and the causticization mud. About 15 kilograms of magnesium carbonate are added to this mixture. Robert Weber. French Patent No. 705,385.

Testing Cigarette Paper for Elasticity

STRIPS of the paper of a definite length are wound around a pin which is rotated. The strips are held fast to the end which is not wound around the pin. The incomplete return revolution of the pin when it is released is a measure of the elasticity of the paper. The apparatus in which this test is made is shown in the accompanying illustration. It consists of a tube (3) which is rotatable and which is slotted for introducing the paper strip, of a stopping device for the free end of the strip and an indicating device for showing the angular rotation of the tube. In order to secure more certain fastening of the paper strip, a second tube (4) is inserted within the tube (3). The new tube is carried along by the outer tube by friction and carries the indicator (12), which travels over the scale (13). The indicator (12) is loaded with the weight (15), which brakes the back rotation, and is so dimensioned, that the graduations on the scale correspond to about gram weights.

The strip of paper, which is about three centimeters wide, is inserted through the slotted tube and fastened tightly. The

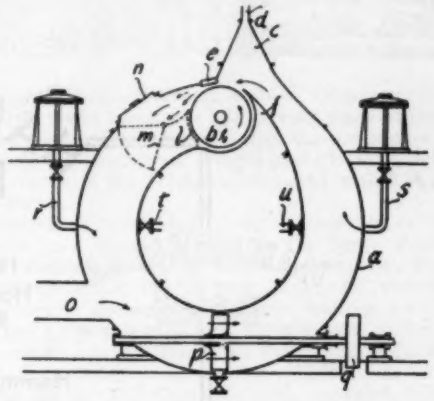


crank is turned so that the indicator passes through an angle of 360 degrees; then the crank is released and the shaft is allowed to be rotated backwards by the elasticity of the paper. The extent to which this back rotation takes place is noted on the scale. It is a measure of the elasticity of the paper. The results are reproducible and check on repeated test. K. Mandl, Zentralblatt fuer d. Papierindustrie, 1931, number 6. Vienna.

Beater Working Under a Vacuum

IT is claimed that this beater, which works under a vacuum or reduced pressure, possesses many advantages, including the positive avoidance of eddy currents and injurious changes in the direction of the travel of the stock in the trough, which results in increased power consumption and which also adversely affects the beating action itself.

The beater is seen in the accompanying illustration. The housing (a) form a closed circulating conduit located in a vertical plane. The beater roll (h) is located at the highest point in the same. A funnel-shaped dome is built at (c) above the beater roll into which the low pressure pipe (d) is connected. The bedplate (e) is located above the beater roll, which is just the opposite in this type of beater. Due to this the direction of the rotation of the beater roll, indicated by the arrow, is the same as the direction of the travel of the stock in the circulating conduit. The stock which rises due to the action of the reduced pressure on the right side of the conduit passes through the beater roll without change of direction. The housing on this side of the beater roll is built in the form of a backfall (f) so as to facilitate the flow of the stock. A dome or crest (1) is arranged on the other side of the beater roll but this does not fit tightly against the circumference of the roll. A rotatable flap (m) is arranged



near this part and serves for changing or controlling the flow of the stock. The stock is fed to the apparatus through the covered opening (n) or it may be fed into the apparatus in a continuous flow through the pipe (o) being drawn into the beater by the action of the low pressure prevailing therein. Mixing, disintegrating and distributing devices (p) may be located at the lowest point in the beater. The manner of the drive of these devices is clearly seen from the figure, connection being made to the prime mover (q). The arrangements (r) and (s) located on either side of the beater are for the purpose of feeding coloring solution and sizing mixtures into the apparatus, while steam and gases are introduced through the connections (t) and (u). Fritz Arledter, Koeln-Kalk, Germany. German Patent No. 506,695.

Production of Esparto Fiber

THE first stage in the process of producing esparto fiber is to treat the raw materials to free them from encrustating substances by successive treatments with aqueous suspensions of lime. This may be carried out either at room temperature or at 100 degrees C. The amounts of lime, that must be added to the first and succeeding baths and the duration of the treatments will vary in accordance with the temperature. Fresh water or a sea water may be used in the process. Where fuel is scarce, the esparto is subjected to an alternative maceration treatment with a more concentrated lime suspension. It has been found that sodium carbonate is not so efficient as lime, but sodium hydroxide is more satisfactory than the latter. Soda liquors, such as are used in obtaining cellulose in papermaking, have also been tried, both alone and with the addition of lime after each boil. The latter method gives a product of better quality. Suitable apparatus for the boiling is described and when water is scarce, countercurrent washing should be used. Beating or other mechanical treatment is necessary to free the fibers. C. de Neyman, Chimie et Industrie, volume 35, 1931, pages 1078-1080.

Swelling Phenomena of Beechwood

EXPERIMENTS were carried out on the swelling of beechwood in different structural directions and its dependence on the content of water in the wood. The results, that were obtained in these experiments, were compared with other woods. It was found in the first place that a saturation point was reached when the wood contained between 25 and 40 per cent of water. Measurements were made to determine the resistance to pressure of the wood in a direction parallel to the fibers, and it was found that this resistance diminishes with increasing water content. The greatest change was found at a water content of 25 to 35 per cent. A rapid method for determining the water content of the wood electrically is described in the article. E. Moraeth, Kolloidchemische Beihefte, vol. 33, 1931, pages 131-178.

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IMPROVEMENT is being registered in the paper market, but it is slow in materializing. Reports in general tell of a gradual broadening of buying interest, of at least some increase in demand and of consumers and converters placing a larger number of orders and for somewhat bigger amounts of the various classes of paper. Manufacturers report jobbers in more of a buying mood, and jobbers say they can easily discern a little expansion of demand from consuming customers. Some mills, through intensive selling efforts and favored with a wider outlet for their product, have found it necessary to increase manufacturing operations to an extent; a few are operating at a much better rate than was the case a month ago, whereas there are others which are adhering to about the same production schedule they have maintained for several months. All in all, if reports and indications are to be taken at their face value, production and consumption of paper is on the rise and the industry is gradually—very gradually—assuming a livelier complexion.

However, the market is not progressing in anything like the manner paper manufacturers and merchants had hoped to witness at about this time. It is quite evident that converters and consumers are acting cautiously in acquiring supplies of paper. Orders are confined almost exclusively to actually required commitments, and there is as yet no disposition manifest to stock up. In short, the fear complex which is prevalent in practically all lines of trade and holding back demand which by all rights and reason should come to the fore is affecting the paper industry along with other branches of manufacturing and distribution.

In a sense, papermakers and mill agents and distributors are partially to blame for this condition, or for its continuance. The pressure to sell paper, and the ever present salesman striving for orders, have given rise to an attitude of indifference among consumers as regards the acquisition of forward supplies; in other words, the buyer and user of paper feel so snug in their position of being able to get any and all the paper they may need at any time, and on short notice, that they are no longer anticipating wants but are limiting purchases to bare immediate needs. Let the situation turn about, with the consumer a bit apprehensive concerning supplies and afraid of having to wait to get deliveries, and a big and broad demand would doubtless spring up at once.

Also, the general slowness in business generally continues to affect the paper market in no small measure. While there is an improved sentiment in business circles, and while some lines of trade have recorded betterment without a question, the fact remains that general business is far from what it should be, and consumption of paper therefore is well below normal. Obviously, the result is that buyers, needing less supply, are buying less paper. Opinion in the trade is that it will take time, perhaps considerable time, for this condition to be rectified, and a consensus of belief among paper manufacturers and merchants is that market improvement will continue to be gradual only.

Latest available statistics, covering the month of July, show that paper production in the United States decreased slightly as compared with the preceding month. Total production of all grades in July reached 435,367 net tons, contrasted with 444,628 tons produced by identical mills in June, according to figures compiled by the American Paper and Pulp Association. The daily average output in July was 1 per cent below the June, 1931, production, and 3 per cent under the production in July, 1930. Production in the first seven months of this year aggregated 3,098,908 tons, against 3,459,178 tons in the corresponding period last year. Shipments from mills during July were 437,233 tons, or slightly in excess of the current output, and comparing with 440,294 tons shipped in the preceding month. Shipments from mills in the first seven months of the current year, totaling 3,098,189 tons, were almost identical with the production of 3,098,908 tons in the same time. Stocks at mills at the end of July last amounted to 260,971 tons, compared with 270,483 tons a month before.

Production of newsprint in the United States in August was 88,344 net tons, according to the News Print Service Bureau compilation, against 99,548 tons in July, while Canadian mills produced 165,124 tons in August, compared with 182,731 tons in the preceding month, making a total United States and Canadian output of 253,468 tons, contrasted with 282,279 tons in July. Shipments from U. S. mills in August amounted to 89,047 tons, against 162,303 tons shipped by Canadian mills. The Canadian mills produced 219,739 tons less newsprint in the first eight months of 1931 than in the same time of 1930, a decrease of 13 per cent. The output in the United States was 106,808 tons or 12 per cent less than in the corresponding period last year, while production in Newfoundland was 4,726 tons or 2 per cent more in the eight months this year than in 1930, and in Mexico 655 tons more, making a continental net decrease of 321,166 tons, or 11 per cent. During August, Canadian newsprint mills operated at 51.3 per cent of rated capacity, United States mills at 59.2 per cent, Newfoundland mills at 96.4 per cent, and Mexican mills at 73.2 per cent, making a continental average of 56.1 per cent. Stocks of newsprint at Canadian mills at the end of August were 49,128 tons and at U. S. mills 32,607 tons, making a combined total of 81,735 tons, which was equivalent to 4.5 days' average production.

Board mills in the United States produced a total of 228,887 net tons of paperboard of all kinds in July last, a slight increase over the 223,000 tons in the preceding month and also a gain over the 222,788 tons in the similar month of 1930, according to the monthly summary of the board industry compiled by the U. S. Department of Commerce. Total board output in the first seven months of the current year was 1,557,931 tons, against 1,615,003 tons in the corresponding time a year ago. Board mills received orders calling for a total of 225,987 tons of board in July, against 222,880 tons in June, and had unfilled orders at the end of July for 48,606 tons, compared with 50,630 tons a month before. Shipments of board from mills during July aggregated 228,011 tons, against 222,218 tons in the preceding month, and stocks of board at producing mills at the end of July amounted to 83,716 tons, contrasted with 82,840 tons a month previously.

It is very apparent, judging from the New York City newspapers, that consumption of newsprint is again on the increase. Department stores and other retail merchants in this city are utilizing large newspaper area for advertising their wares, and publishers have perforce added pages to their issues during the last few weeks. It is also understood that circulations are holding up well, and there is no doubt that more newsprint is being consumed in the territory than in sometime.

Demand for fine papers is of consistent character although running in rather light volume. No further definite changes in prices are reported but it is no secret that some mills are granting slight concessions. Wrapping paper is holding to a steady quotational level and is reported moving comparatively well. Tissue is quiet and on the easy side quotably, while demand for cover, parchment, glassine and other of the so-called specialty papers is little else than routine as far as its scope is concerned.

Boards are in moderate call, with some boardening of demand noted recently. Reports tell of manufacturers endeavoring to raise market prices but nothing of a concrete nature has yet developed in this connection.

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Papermaking Rags

While some increase in demand from paper mills for rags has been registered since the Labor Day holidays, buyers are still operating in a most reserved way and the market is not even so much as approaching normal in point of activity. It is quite evident that either paper manufacturers are not using customary quantities of rags or else that they have stocks on hand covering current requirements to the extent where they can afford to keep mostly out of sight as buyers in the market, as demand is developing only spasmodically and is principally for small amounts of rags. This situation embraces practically all grades of papermaking rags, and there is no particular kind of stock which stands out in the restricted purchasing in which consumers are now engaging.

As would be expected under these circumstances, easiness characterizes prices of rags. There are certain grades which, favored with a fairly firm supply condition, are well maintained quotably, but as a general thing the market is all on the side of buyers, who are succeeding in filling their limited wants at prices close to the lower edges of quotational ranges and in frequent instances even at further recessions. Dealers are eager for orders and are not hesitating to lower prices somewhat when to do so means that they dispose of some of their stocks they are anxious to move. Nevertheless, no additional board changes in price levels have been recorded during the past month, although about every revision that has been noted has been in a downward direction.

New cotton and linen cuttings are in decidedly restricted demand, and some grades are so slow moving that it is a difficult matter to ascertain what constitutes market values. In fact, prices of nearly all descriptions of cuttings are mainly nominal, with only buyers themselves in a position to determine how cheaply they can acquire supplies. For example, No. 1 white shirt cuttings are quoted as a usual thing at 6.25 to 6.50 cents per pound f.o.b dealers' shipping points, yet there have been reports of purchases at as low as 5.75 cents and even down to 5.50 cents. Linen cuttings are especially neglected by paper mills.

Roofing rags have eased further in price in the Middle West but the New York market rules steady, with sales of No. 1 classification domestic roofing reported at 75 cents per hundred pounds at shipping points and of No. 2 stock at 50 to 55 cents. Felt mills are reported ignoring foreign roofing rags while apparently filling their needs with domestic packings. Old white cottons and thirds and blues are in limited demand, though prices as quoted show little change. Repacked No. 1 old whites are around 4.50 cents per pound at dealers' shipping points, and repacked thirds and blues 1.25 to 1.50 cents a pound. There has been a considerable expansion of demand for old cotton and silk stockings for export but domestic mills continue to manifest a minimum of interest in these rags.

Occasional sales of foreign rags, notably new cotton cuttings of some grades, were reported prior to the exchange debasement, indications being that prices were so attractively low that paper manufacturers considered it good judgment to absorb some of the supplies offered. With the upheaval in exchange, however, trade in rags has about ceased temporarily, although importers are of the belief that when money rates have settled they will be enabled to buy rags abroad with greater facility and possibly at lower costs since foreign shippers in all likelihood will strive to sell to the United States.

Average quotations f.o.b. shipping points and ex dock New York, many of which should be considered as strictly nominal, are as follows:

New Stock	New York and Chicago
White shirt cuttings, No. 1	5.75– 6.25
White shirt cuttings, No. 2	4.00– 4.25
Fancy shirt cuttings	2.25– 2.50
Washables, No. 1	2.25– 2.50
Unbleached muslins	6.50– 6.75
White lawns	5.25– 5.50
Overall cuttings, blue	5.00– 5.25
Black silesias	3.00– 3.25
Canton flannels, bleached	6.00– 6.25
Canton flannels, unbleached	5.00– 5.25
Shoe cuttings, bleached	5.25– 5.50
Shoe cuttings, unbleached	4.25– 4.50
Light silesias	4.75– 5.00
O. D. khaki cuttings	4.25– 4.50
Mixed khaki cuttings	3.75– 4.00
Corduroy cuttings	2.75– 3.00
Cottonade cuttings	2.00– 2.25
Linens, No. 1 white, foreign	7.50– 8.00
Light prints, foreign	2.75– 3.00
Old Stock—	
Whites, No. 1, repacked	4.25– 5.00
Whites, No. 2, repacked	2.00– 2.50
Whites, house soiled	1.75– 2.00
Whites, street soiled	1.50– 1.75
Thirds and blues, rough	.70– .90
Thirds and blues, repacked	1.25– 1.50
Lace curtains	3.00– 3.25
Black stockings	2.25– 2.50
Cotton canvas, No. 1	3.25– 3.50
White cotton batting	1.00– 1.25
Roofing, No. 1 (cloth strippings)	.75– .85
Roofing, No. 2	.50– .60
Linsey garments, foreign	.85– .95
Dark colored cottons, foreign	.70– .75
Blue linens, foreign	2.75– 3.00
Gray linens, foreign	3.00– 3.25
White linens, foreign	5.00– 5.50
Light prints, extra foreign	2.00– 2.25

Rope and Bagging

There have been rumors of a further reduction in paper mill prices of old rope but this has not been confirmed, and it is understood that consumers are granting unchanged figures for such limited-sized lots of this raw material as they are purchasing. Domestic No. 1 old manila rope is about 1.75 cents per pound f.o.b. shipping points, and this same price ex dock New York applies to imported old manila rope. Demand is very slow, and there are signs of stocks accumulating in dealers' hands. However, it is stated that incoming supplies are falling away to a surprising degree, since prevailing market values no longer recompense collectors for gathering old rope.

Bagging is in relatively fair demand, and quotably maintained. No. 1 scrap bagging is bringing around 1.25 cents a pound at shipping points, and domestic roofing bagging about 45 cents per hundred pounds. Old gunny bagging is moving in some directions with dealers and importers quoting 1.50 to 1.60 cents a pound for No. 1 quality stock.

F.o.b. shipping point and ex dock New York quotations follow:

Gunny, No. 1 domestic	1.50– 1.60
Gunny, No. 1 foreign	1.50– 1.60
Scrap bagging, No. 1	1.20– 1.30
Roofing bagging	.45– .55
Wool tares, heavy	1.40– 1.50
Wool tares, light	1.30– 1.40
Manila rope, No. 1 foreign	1.50– 1.75
Manila rope, No. 1 domestic	1.50– 1.75
Sisal strings	1.25– 1.50
Mixed strings	.65– .75

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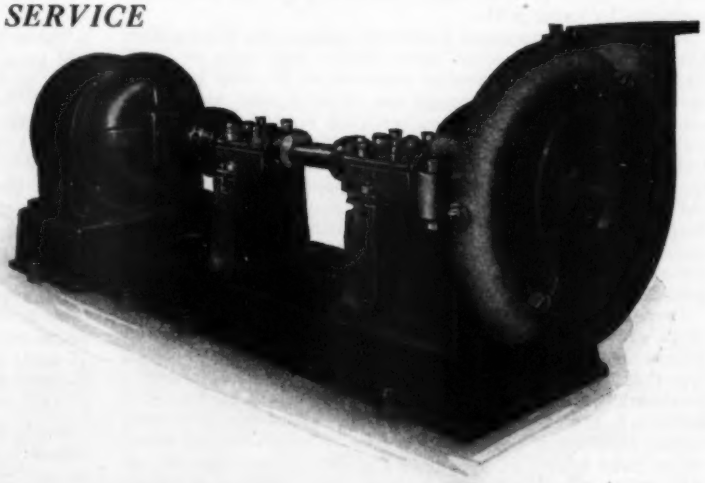

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Old Paper

Of all the various raw materials entering paper and board mills, waste paper as a division appears to be favored with broader market activity at present. Board manufacturers are buying old paper on a fair scale, and some paper mills are absorbing supplies in moderate tonnage. At least demand is sufficient to not only support prices but in some instances to send market rates slightly higher. There have been additional advances in prices of book stock, folded news, mixed paper and some kinds of white shavings. The supply situation is fairly strong and is also lending firmness to market values. New York dealers report sales of folded news at 40 cents per hundred pounds, No. 1 mixed paper at 30 cents, No. 1 book stock at 65 cents for heavy flat magazines, and of No. 1 soft white shavings at 2 cents and up to 2.25 cents for one-cut packing. Old No. 1 kraft is firm at 1.25 to 1.30 cents a pound at shipping points, and new kraft cuttings are selling at 1.60 cents.

The following are quotations f.o.b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	2.20– 2.65
Hard white shavings, No. 2	2.00– 2.25
Soft white shavings	1.90– 2.25
Colored shavings	.50– .60
Heavy book, No. 1	.65– .75
Crumpled book, No. 1	.50– .60
Ledger stock	.60– 1.00
Kraft, No. 1	1.25– 1.35
New kraft cuttings	1.60– 1.75
White blank news	1.60– 1.75
Manilas, No. 1	.55– .65
Manilas, container	.40– .50
Folded news	.40– .50
Sulphite mill wrappings	.50– .60
Old corrugated boxes	.40– .50
New corrugated box cuttings	.45– .55
Mixed paper, No. 1	.30– .40
Common paper	.25– .30

Pulpwood

A very restricted demand prevails for pulpwood, according to reports. Grinders and manufacturers apparently have their needs amply supplied and are engaging in little open-market buying. The price tone is none too steady but no material revisions in market levels have been recorded.

Exports of pulpwood from Canada, all of which came to the United States, during the first eight months of this year totaled 647,462 cords, valued at $6,292,907, comparing with 957,496 cords of a value of $9,698,863 in the similar period of 1930.

Mechanical Pulp

Reports as a general thing tell of a fair call for mechanical wood pulp. Consumers are proceeding rather carefully in their absorption of supplies yet are said to be buying in moderately good volume, not only against forward needs but also for spot shipment. Moreover, prices exhibit steadiness, and members of the trade aver that the market is now at the bottom with every probability that higher values will be witnessed before the winter has far advanced. Canadian groundwood is reported available at $24 per ton f.o.b. grinding mills in the Dominion, and it is said that some purchases are being accomplished at a shade under this price. Domestic groundwood is around $27 at producing points, while Scandinavian groundwood is quoted from $24 upwards per short ton ex dock American Atlantic ports.

Production of mechanical pulp in the United States in July amounted to 66,428 net tons, compared with 80,034 tons in the preceding month, according to identical mill reports to the American Paper and Pulp Association. Stocks at producing mills at the end of July were 67,584 tons, against 75,040 tons a month earlier.

Chemical Pulp

The market for chemical wood pulp is quiet decidedly, and prices are on the soft side. Domestic pulps are feeling the adverse influence of the foreign situation, with the exception

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of that in kraft pulp, and domestic producers in at least some instances are reducing prices in order to compete. This is particularly so as concerns Pacific coast manufacturers of sulphite, who are marketing their product at surprisingly low levels. There have been sales, by way of example, of West coast bleached sulphite reported down to a basis of about 2.30 cents a pound ex dock Atlantic seaboard, and such pulp is said to be freely offered at 2.40 to 2.50 cents. Unbleached sulphite of book grade is quoted at around 2.25 cents a pound f.o.b. pulp mills, and of news grade at 2 cents or thereabouts. Bleached soda pulp is priced at between 2.75 and 3 cents delivered paper mills, and kraft pulp at 1.80 cents upwards f.o.b. pulp plants.

Chemical pulp production in the United States during July reached 93,676 short tons, compared with 98,629 tons produced in June by identical mills, according to American Paper and Pulp Association's figures. Stocks at producing mills at the end of July amounted to 19,637 tons, contrasted with 19,853 tons at the end of the preceding month.

Quotations f.o.b. pulp mills are as follows:

Bleached sulphite	2.35– 4.50
Easy bleaching sulphite	2.20– 2.40
Unbleached sulphite, No. 1 strong (news grade)	2.00– 2.25
Unbleached sulphite, No. 1 book	2.15– 2.30
Soda pulp bleached (delivered)	2.75– 3.00
Mitscherlich, unbleached	2.50– 2.75
Kraft	1.80– 2.75
Screenings, refined	(Nominal)

Chemicals

Not much change in quotations on pulp and papermaking chemicals is noted despite the quiet market obtaining. Consumers are buying in ultra reserved fashion as their urgent requirements necessitate, and most orders call for comparatively small quantities. Casein is priced at a range of from 6 cents a pound for the domestic standard ground to 9.50 cents for the finely ground Argentine product. The soda ash basis is maintained at 1.25 cents per pound in bags at works, as is the caustic soda quotation at 2.50 cents for the solid product.

Average quotations are as follows:

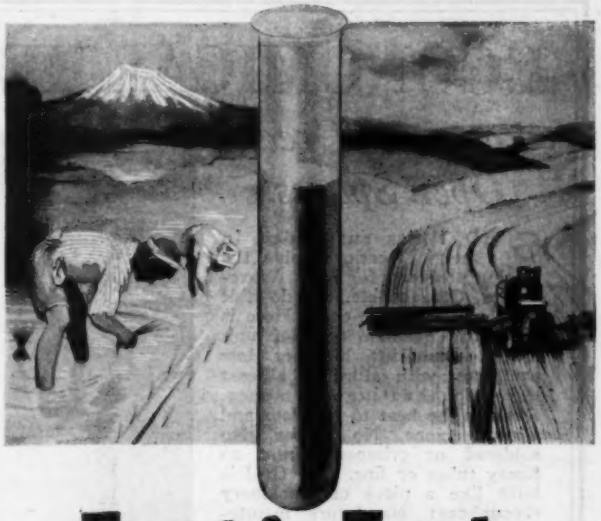
Alum, lump ammonia	3.50– 3.75
Alum, lump starch	3.75– 4.00
Blanc fixe, powdered	3.75– 4.00
Bleaching powder	1.75– 2.00
Brimstone (long ton, at mine)	18.00–20.00
Casein (duty paid)	6.00– 9.50
Caustic soda, solid, spot delivery	2.50– 2.55
China clay, domestic washed	7.00–11.00
China clay, foreign	13.00–21.00
Rosin	4.05– 4.15
Satin white	2.00– 2.25
Soda ash, 58 per cent light (bags)	1.15– 1.25
Starch, papermaker's, in bags	2.67–
Talc (ton)	16.00–18.00

Goulds Pumps in U.S.S. Akron

With the introduction of helium as a lifting gas for airships, a new problem in ballasting was presented to airship engineers. So long as hydrogen had been used, the loss in weight caused by fuel consumption, was compensated for by release of the hydrogen gas at little cost.

As helium is produced at a higher cost than hydrogen it is undesirable to valve the gas freely. Consequently, ballast water recovery systems are employed on the large airships such as the Akron, to compensate for the loss in weight due to the burned fuel. The system is installed in connection with the engines and the water in the exhaust gases which result from the burning of fuel is condensed. This water is pumped into containers.

In the Akron the recovered water is pumped to the containers by means of eight (8) Goulds pumps. These pumps are fabricated in a large part from aluminum alloy and it has been possible to reduce the weight to approximately sixteen (16) pounds, normally this pump, constructed of cast iron, weighs 110 pounds.



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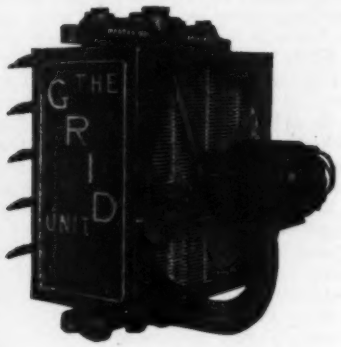

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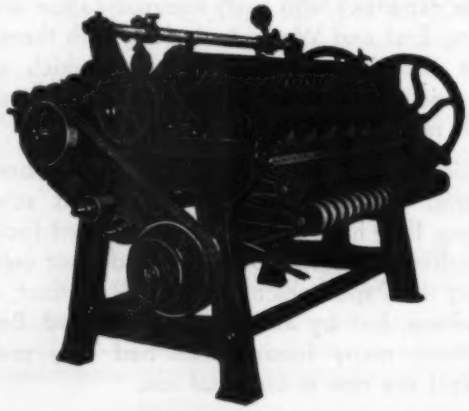

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White sulphite	7– 30
Colored rag	14– 40
Colored sulphite	7– 30
Ledger—	
White rag	15– 40
White sulphite	10– 3$
Colored sulphite	10– 30
Colored rag	14– 40
Bond—	
White rag	15– 40
White sulphite	7– 30
Colored sulphite	7– 30
Colored rag	14– 40
Book—	
No. 1 S. & S. C.	5.25– 8.00
Machine finished	5.00– 8.00
English finish	5.00– 8.00
Coated and enameled	6.75–10.00
Lithograph, M. F.	7.00–11.50
Newsprint—	
Rolls, contract, per ton, delivered New York	57.00–
Rolls, transient, per ton, delivered New York	57.00–
Sheets, per ton, delivered New York	62.00–
Sideruns, per ton, delivered New York	42.00–46.00
Cover stock—	
Coated, both sides	–10.25
Coated, one side	–10.15
Tissue—	
No. 1 white, 20x30	.65– .70
No. 2 white, 40x36	.55– .65
No. 1 Manila, 24x36	.55– .65
Kraft	.70– .80
Wrapping—	
No. 1 kraft	4.50– 5.25
No. 2 kraft	3.75– 4.00
Southern kraft	3.50– 4.00

Boards—	New York and Chicago
News	25.00–30.00
Straw	35.00–40.00
Plain chip	25.00–30.00
White coated chip	42.50–45.00
Manila coated chip	35.00–40.00
Binders' board	65.00–70.00

The Kalbfleisch Corp., New York City, has appointed as sales manager of its rosin size division, E. Y. Burckhalter, who has been with the organization for more than seven years, and recently acted as assistant sales manager of the division.

J. L. Fearing, vice-president and sales manager of International Paper Company, states that the Seaman Paper Company will continue, as in the past, to handle the major portion of the product of the International's Tonawanda mill. The unsold balance of the output of Tonawanda mill, formerly owned by Tonawanda Paper Company, will be sold under Mr. Fearing's direction through the sales department of International Paper Company.

Delaware Valley Section of T.A.P.P.I.

A Delaware Valley Section of the Technical Association of the Pulp and Paper Industry was organized at a meeting in Philadelphia on Tuesday, September 15, with the following officers: Chairman, W. R. Maull, vice-president of Dill & Collins Co., Philadelphia; vice-chairman, G. E. Landt, chief chemist, Continental Diamond Fibre Co., Bridgeport, Pa.; secretary-treasurer, Harvey P. Cannon, chemist, Container Corp. of America, Manayunk, Pa.; executive committee, J. H. Hazelwood, Barber Asphalt Co., Gloucester City, N. J.; C. W. Rivise, patent attorney, Philadelphia.

W. M. Shoemaker, Jr., secretary of the National Vulcanized Fibre Co., Yorklyn, Del., was chairman of the meeting and welcomed the gathering, which consisted of members and others from Delaware, Pennsylvania and New Jersey, from which states the roster of the Delaware Valley Section will be recruited.

Papers and Discussions

Following organization and election of officers, the section listened to papers and discussions on new apparatus. Jacob Edge, secretary of the Downingtown Manufacturing Company, read a paper on "The Extractor Roll in Paper Board Manufacture," in which he described the various methods used to remove water from the sheet on a cylinder machine, with particular reference to the function of the extractor roll. This bears a resemblance to a cylinder mould, but is stronger and is characterized by greater rigidity; it has a diameter of 24 inches. A rubber covered roll on top of it is weighted to exert a pressure of from 70 to 90 pounds a lineal inch.

Mr. Edge said that by use of the extractor roll water may be removed from a thick sheet of slow stock; other advantages cited included (1) speeding machine, (2) increase in bulk of board, since less pressure is later required in calender stock; (3) improved finish, (4) felt saving, since suction boxes produce a drag on felts and tend to narrow them; (5) increase in Mullen strength board. It is intimated that extractor rolls may be used later in series and in this way obviate the use of wet felts.

W. L. Campbell, of the Mine and Smelter Supply Co., presented a paper on the subject of beating with rods in the Marcy mill. He gave an account of the results obtained in using the mill for beating groundwood, screening straw and sulphate pulp. The opinion was expressed that the rod mill can replace beaters but jordans will be needed to supplement its work.

The meeting closed with a brief talk by R. G. Macdonald, secretary of the Technical Association, who briefly indicated some of the factors that would assure the success of the new section.

Pennsylvania Pump and Compressor Co., Easton, Pa., has formed a connection with Byer Engineering Associates of the same city with branch offices at 136 Liberty street, New York and 1328 Chestnut street, Philadelphia. The Byer Engineering Associates specialize in condensing and cooling apparatus, vacuum and centrifugal pumps, etc.

Dard Hunter's Desire

In an article contributed by Dard Hunter to Part 7 of The Colophon, a rare book collector's publication, he says it is his desire to take up his home in a far-off island in the South Pacific Ocean and there print a book. He would build a paper mill, using only the bamboo and other native materials at hand. The ink would be extracted from the bark of trees, but he is puzzled how the type could be made if metal is not available.

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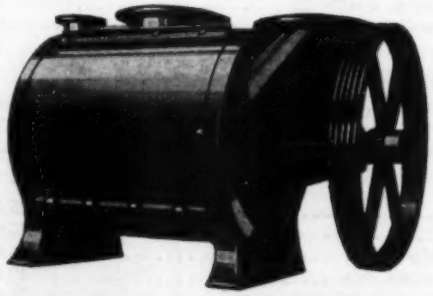

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AMERICAN PAPER MACHINERY AND ENGINEERING WORKS
Glens Falls, New York

EXPORTS

Exports of paper and paper products from the United States continued to shrink, in point of value, during July, when total exportations reached a value of $1,932,910, as compared with shipments of an aggregate value of $1,935,747 in the preceding month, and $2,411,967 in the similar month last year, according to official statistics compiled and issued by the U. S. Department of Commerce in Washington. Exports during the first seven months of the current year amounted in value to $14,058,775, registering an appreciable decrease as compared with shipments of a value of $19,134,056 in the corresponding period of 1930.

Newsprint exports in July were valued at only $35,013, against $44,360 in June of this year and $49,184 in July last year, with principal exports to China, Cuba, Argentina and other South American countries. Book paper, uncoated, exports in July were valued at $92,891, contrasted with $129,924 in the same month of 1930, while writing paper shipments in July reached a value of $118,327, against $155,142 last year, and wrapping paper exports were of a value of $116,165, compared with $222,456 a year ago. Tissue paper exports decreased in value from $87,420 in July, 1930, to $38,196 last July, and hanging paper shipments amounted in value to $7,551, against $16,764 in July a year ago. Paper bag exports reached a value of $66,163 in July, against $68,224 in the same month a year ago.

Exports of boxboard, including paperboard and strawboard, were valued at $96,444 in July, compared with $151,281 in July, 1930, while shipments of other paperboard were of a value of $120,092, contrasted with $135,730 in July last year.

IMPORTS

Wood Pulp

Increased buying interest among paper manufacturers in foreign wood pulp, more especially in kraft pulp, is reported by importers and agents, and in some cases consumers have bought on a fairly large scale in recent weeks. However, reports say that purchases have been confined to tonnage which buyers have felt reasonably sure they will need over the next few months, and market activity has chiefly involved kraft pulp; sulphite of the various grades, both bleached and unbleached, remaining in a decidely quite position.

From a statistical standpoint, the pulp market seems to be gradually improving. Production in Europe has been substantially curtailed; mills in practically all the pulp-manufacturing countries on the Continent having reduced their output to 70 per cent for the balance of this year and during the first half of 1932, and it is likely that in individual instances production has been decreased even below this level. While such action fails to have influence in the current market, being offset by a relative decline in world consumption of sulphite, the potentialities of this rather drastic move on the part of European manufacturers can be readily opined, and expressions of opinion by members of the trade is that it is only a question of time when a much stronger market condition will arise.

Producers abroad are reported holding firmly for a minimum price basis on kraft pulp. Sales effected of late have been at 1.55 cents to slightly higher per pound ex dock Atlantic seaboard, and importers state that purchases of prime Scandinavian kraft are no longer feasible at less than 1.55 cents. Some of the high-quality brands of kraft are quoted up around 1.75 cents, and are said to be fetching the prices asked by sellers. Board manufacturers have bought kraft pulp in sizeable volume, presumably figuring that they cannot go far wrong on price at the market level now prevailing.

Sulphite values, on the other hand, are still on the toboggan. Strong unbleached sulphite has fallen to a new low price level, with prime grades reported available at 1.85 and 1.90 cents per pound ex dock New York and other American Atlantic ports, while prime bleached sulphite of foreign origin is quoted at 2.50 cents dock with some purchases possible at a little under this price basis. Demand for easy bleaching sulphite is close to nil, because with bleached pulp so cheap, consumers are absorbing very little supply of the easy bleach variety. Imported groundwood has been in moderate demand and steady quotably at $26 to $28 per short ton for dry and $24 to $28 for moist pulp ex dock Atlantic seaboard.

Imports of chemical pulp into the United States registered a gain in July over the preceding month, and were the largest in any previous month this year with the exception of January. Total imports of all grades of chemical pulp in July reached 105,759 long tons, valued at $4,438,547, compared with 100,743 tons of a declared value of $4,643,281 in June this year, and 97,375 tons of a value of $5,400,249 in July, 1930, according to official figures released by the U. S. Department of Commerce. The July imports brought the total for the first seven months of this year up to 669,719 long tons, compared with 780,779 tons imported in the corresponding period last year.

Groundwood imports in July were 15,826 long tons, valued at $430,374, contrasted with 12,064 tons of a value of $321,042 in the preceding month, and making a total of 99,934 tons of a value of $2,564,884 in the first seven months this year, against 150,296 tons of a value of $4,202,664 in the same time a year ago.

Current market quotations ex dock New York, and receipts at the port of New York during September, 1931, these data being taken from manifests of vessels reaching that port last month, follow:

Bleached sulphite, No. 1	2.50– 4.25
Unbleached sulphite, strong No. 1	1.85– 2.00
Unbleached sulphite, No. 2	1.75– 1.90
Easy bleaching sulphite	2.10– 2.25
Mitscherlich, unbleached, genuine	2.40– 2.60
Mitscherlich, unbleached, ordinary	2.00– 2.15
Kraft, standard Swedish	1.55– 1.80
Groundwood, per ton (dry)	26.00–28.00

Lagerloef Trading Co., 2,137 bls. from Kotka, 1,160 Wiborg, 2,886 Helsingfors, 2,840 Kemi and 2,913 Rauma; Castle & Overton, 2,734 bls. from Wiborg, 3,331 Hamburg and 600 Rotterdam; Irving Trust Co., 675 bls. from Bremen and 150 Oslo; Guaranty Trust Co., 1,331 bls. from Gothenburg; Russell McCandless, 850 bls. from Gothenburg and 300 Stockholm; E. M. Sergeant Co., 1,048 bls. from Gothenburg; Johaneson, Wales & Sparre, 646 bls. from Hamburg; Brown Bros. & Co., 250 bls. from Hamburg; Price & Pierce, Ltd., 1,050 bls. from Gothenburg and 2,850 Wallvik; National City Bank, 3,650 bls. from Gothenburg; E. J. Keller Co., 721 bls. from Hamburg; J. Andersen & Co., 275 bls. from Hamburg and 1,350 Hernosand; Pagel, Horton & Co., 1,000 bls. from Gefle; Stora Kopparberg Corp., 1,150 bls. from Skutskar; Bankers Trust Co., 3,625 bls. from Iggesund; Bulkley, Dunton & Co., 900 bls. from Gothenburg; M. Gottesman & Co., 2,125 bls. from Gothenburg and 5,200 Sibenik; Order, 680 bls. from Wiborg, 450 Hamburg, 5,250 Norrsunket and 1,750 Iggesund. Pulpwood—Amtorg Trading Corp., 3,120 cords from Leningrad; Krogstad Shipping Agency, 1,160 cords from Richibucto.

Paper Stock

The United States imported papermaking rags to the amount of 11,394,108 pounds, valued at $157,187, in July last, comparing with 9,123,880 pounds of a declared value of $134,767 in the preceding month, according to official statistics compiled by the U. S. Department of Commerce, and

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making a total of 73,736,314 pounds imported in the first seven months of this year, against 208,329,622 pounds in the same period a year ago. Imports of all other paper stock except wood pulp in July amounted to 12,026,673 pounds, valued at $133,386, bringing the total for the seven-month period this year up to 69,718,502 pounds, contrasted with 162,537,150 pounds last year.

Paper stock imports in September continued light, judging from receipts through the port of New York. Arrivals of papermaking materials at that port last month, these data being compiled from the manifests of steamers reaching New York during the month and therefore unofficial, were as follows:

Old Rope—Brown Bros. & Co., 60 bls. and 53 coils; Banca Commerciale Italiana Trust Co., 48 coils and 77 bls.; Order, 38 bls.

Old Bagging—Darmstadt, Scott & Courtney, 601 bls.; Chase National Bank, 67 bls.; First National Bank of Boston, 97 bls.; Castle & Overton, 47 bls.; E. J. Keller Co., 235 bls.; Irving Trust Co., 199 bls.; E. Butterworth & Co., 40 bls.; Banca Commerciale Italiana Trust Co., 313 bls.; Bank of New York & Trust Co., 160 bls.; Chemical Bank, 156 bls.; Bush Service Corp., 92 bls.; R. F. Downing & Co., 103 bls.; Order, 113 bls.

Rags—Castle & Overton, 10 bls.; J. Cohen & Son, 59 bls.; Darmstadt, Scott & Courtney, 68 bls.; C. Nelson, 10 bls.; George M. Graves Co., 19 bls.; E. Butterworth & Co., 47 bls.; S. Birkenstein & Sons, 126 bls.; Ernst Mayer, 25 bls.; Katzenstein & Keene, 133 bls.; A. Bloch & Co., 56 bls.; L. Rosenbaum, 77 bls.; E. J. Keller Co., 510 bls.; International Trust Co., 48 bls.; Chemical Bank, 101 bls.; Baring Bros. & Co., 18 bls.; Amtorg Trading Corp., 163 bls.; Brown Bros. & Co., 136 bls.; Order, 620 bls.

Miscellaneous Paper Stock—Irving Trust Co., 81 bls.; Milton Snedeker Corp., 289 bls.; First National Bank of Boston, 287 bls.; Baring Bros. & Co., 169 bls.; J. Cohen & Son, 23 bls.; Bank of New York & Trust Co., 39 bls.; William Steck & Co., 62 bls.; Darmstadt, Scott & Courtney, 208 bls.; T. D. Downing & Co., 281 bls.; Union Waste Co., 53 bls.; Order, 119 bls.

Paper

In point of value, importations of paper into the United States dropped to a new low level during July, when imports were valued at a total of $10,246,881, comparing with $11,364,917 in the preceding month and $12,359,117 in the same month of last year, according to official statistics issued by the U. S. Department of Commerce. Imports in the first seven months of the current year were valued at $76,342,584, against $87,702,027 in the corresponding time a year ago.

Paper imports last month were still on the low side, judging from receipts at the port of New York. Arrivals of all kinds of paper through that port during September, 1931, these data being taken from manifests of arriving steamers and therefore unofficial, were as follows:

Printing—Perkins-Goodwin Co., 826 reels from Hamburg and 576 reels Bremen; Martin & Bechtold, 11 cs. from Hamburg; Lunham & Reeve, 664 reels from Kotka, 295 reels Wiborg and 303 rolls and 174 bls. Gothenburg; Jay Madden Corp., 226 reels from Hamburg and 286 reels Wiborg; Oxford University Press, 9 cs. from Liverpool; Stora Kopparberg Corp., 75 reels from Gothenburg; Keuffel & Esser Co., 28 rolls from Hamburg; Parsons & Whittemore, 148 rolls from Hamburg; Baldwin Paper Co., 183 reels from Hamburg; C. Steiner, 24 cs. from Bremen; International Paper Co., 1,502 rolls from Dalhousie, N. B.; P. C. Zuhlke, 64 cs. from Antwerp; Davies, Turner & Co., 6 cs. from Southampton; E. Dietzgen & Co., 43 cs. from Rotterdam and 4 cs. Hamburg; Bank of Montreal, 6,757 rolls from Corner Brook; W. H. Bell, 3,908 rolls from Liverpool, N. S.; T. N. Fairbanks, 7 cs. from Antwerp; A. S. Zabriskie, 44 reels from Hamburg; Order, 1,943 reels from Bremen and 1,082 reels Hamburg.

Wrapping—Borregaard Co., 220 reels and 380 bls. from Gothenburg; Standard Fruit & Shipping Co., 10 bls. and 71 reels from Bremen; F. C. Strype, 14 cs. from Antwerp; E. Dietzgen & Co., 43 cs. from Rotterdam; J. P. Heffernan Paper Co., 50 bls. from Bilbao; F. L. Kraemer & Co., 110 bls. from Gothenburg; Steiner Paper Corp., 5 cs. from Gothenburg and 22 cs. Rotterdam; Standard Products Corp., 4 cs. from Antwerp; Walker Goulard Plehn Co., 100 bls. from Gothenburg.

Cigarette—M. Spiegel & Sons, 6 bls. from Barcelona, 7 bls. Havre and 7 bls. Genoa; American Tobacco Co., 200 cs. from Bordeaux and 1,150 cs. Havre; P. J. Schweitzer, Inc., 26 cs. from Marseilles; G. A. Henshaw & Son, 95 cs. from Southampton and 37 cs. Havre; Gluckman & Stranch, 2 cs. from Bordeaux; De Mauduit Paper Corp., 1,392 cs. from St. Nazaire; Champagne Paper Corp., 538 cs. from Havre; Standard Products Corp., 220 cs. from Havre; Suarez & Crespo, 5 cs. from Alicante.

Writing—Richard Shipping Corp., 12 cs. from Havre; Guibont Freres & Co., 9 cs. from Southampton; J. E. Bernard & Co., 2 cs. from Havre; Stern Bros., 35 cs. from Havre; Distinctive Writing Paper Co., 6 cs. from Havre; Interocean Forwarding Co., 4 cs. from London.

Filter—H. Reeve Angel & Co., 37 cs. from London and 19 cs. Southampton; C. Sleicher & Scholl, 13 cs. from Hamburg; American Hawaiian Steamship Co., 3 cs. from London; J. Manheimer, 206 cs. from Southampton; A. Giese & Son, 60 bls. from Southampton; E. Fougera & Co., 46 cs. from Southampton.

Tissue—Old Master Paper and Pulp Corp., 14 cs. from Hamburg; W. J. Byrnes & Co., 5 cs. from Southampton.

Drawing—Keuffel & Esser Co., 14 cs. from Rotterdam and 128 cs. and 9 rolls from Hamburg.

Photo—P. C. Zuhlke, 4 cs. from Bremen and 4 cs. Antwerp; Globe Shipping Co., 120 cs. from Bremen; J. J. Gavin & Co., 7 cs. from Southampton; Gevaert Co. of America, 37 cs. from Antwerp.

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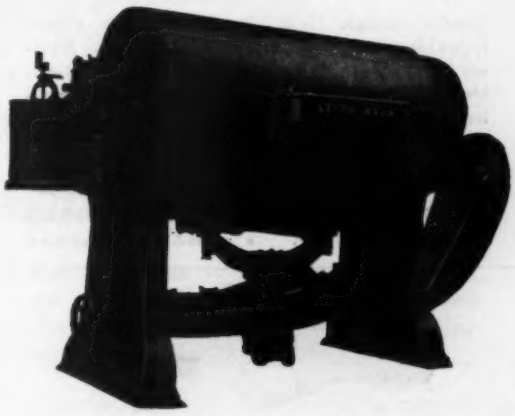

NEW AND IMPROVED 40" DRUM

The features of this new, sturdily constructed Leith Walk Inflow Screen are: Elimination of heavy and floating dirt and the ease with which it may be cleaned. Protected anti-friction bearings. Discharges for convenient spouting to head box. Adjustable stroke indicators. Heavy and floating dirt discharges. Counter balance springs—can be inspected while running. Improved drum seal and enclosed drum drive and vibrator mechanism running in oil. Capacity on this screen runs as high as 7,000 lbs. per hour.

Descriptive Bulletin Mailed upon request.

PAPER-MAKING MACHINERY ESTABLISHED 1846 PITTSFIELD, MASS.

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PITTSFIELD · MASSACHUSETTS
BUILDERS OF HIGH GRADE MACHINERY FOR PAPER MILLS

The Marion Dolly Truck
— built to move paper EASILY

Stays put while being loaded from side or end — then rolls away like a ball, its load perfectly balanced.

Cradle models (low wheel and high wheel types) for handling rolls and bales. Flat top models for trucking cases, cartons and flat stock. Heavy frames of Marion Certified Malleable Iron. All wheels have tool steel roller bearings.

Seven sizes, sold on a money-back guarantee. — Write for circular.

MARION MALLEABLE IRON WORKS
924 Miller Avenue • MARION, Indiana

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Manufacturers and Contractors

WE ARE fully equipped to supply fabricated materials and to install complete piping systems for Electric Power Stations, Blast Furnaces, Steel Mills, Coke Works, and Industrial Plants of every description—backed by an experience of more than a quarter century.

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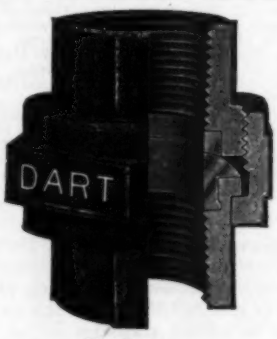
Detroit . General Motors Bldg.



Know the merits of the Dart Bronze to Bronze ground seat Unions

Try a free sample

Strength of Malleable Iron in combination with
2 Two Non corrosive seats of bronze

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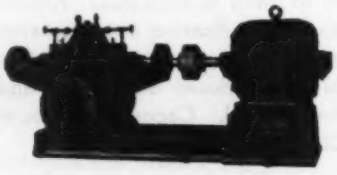
LAWRENCE "VORTEX" CENTRIFUGAL PUMPS



A heavier, more rugged pump clear through

From suction end to discharge you will find LAWRENCE "VORTEX" PUMPS built to stand up under the severe conditions of the paper industry. Compare it, part for part, with pumps you have used in the past. Unless you are already a LAWRENCE "VORTEX" user, you will be strongly impressed by the fact that each part is heavier, more rugged, and is designed and built equal to the job in your plant. A pump for every purpose, for pumping any liquid—pulp stock, white water, acids, etc.

Write for Bulletins.

LAWRENCE PUMP & ENGINE CO.
P. O. Box 70 LAWRENCE, MASS.

Pickles' Patent Automatic Steam Regulator FOR Paper Making Machines

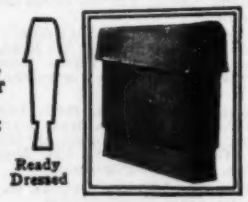
Which absolutely control the drying of the sheet. Installed on sixty days' trial

W. F. PICKLES **Buckland, Conn.**

"READY DRESSED" MILL COGS

LABOR SAVING—TIME SAVING

THE MOST ECONOMICAL FILLING THAT CAN BE PUT IN A MORTISE WHEEL



WE MAKE ANY STYLE OR SIZE WANTED

WRITE FOR INSTRUCTION SHEET "O" WHICH IS FREE

QUICK SERVICE ON ALL SIZES
THE N. P. BOWSHER CO., So. Bend, Ind.

Hanging—F. J. Emmerich & Co., 15 bls. from Hamburg; J. W. Hampton Jr. & Co., 11 pkgs. from Antwerp; I. F. Downing & Co., 12 cs. from Southampton and 3 bls. London; Irving Trust Co., 23 cs. from Hamburg; Guaranty Trust Co., 18 cs. from Hamburg; Order, 5 cs. from London.

Board—Lagerloef Trading Co., 501 bls. from Kotka; H. Fuchs & Son, 71 bls. from Gothenburg; Progressive Fibre Specialty Co., 14 bls. from Gothenburg; Chase National Bank, 7 cs. from Antwerp; Johaneson, Wales & Sparre, 569 reels from Wiborg; Chatham Phenix National Bank, 28 bls. from Gothenburg; Treetex Corp., 6 cs. from Gothenburg; Colman Paper Co., 10 cs. from Antwerp; Order, 74 bls. from Hamburg, 4 reels Rotterdam and 2 cs. London.

Miscellaneous—Kupfer Bros. Co., 14 cs. from Bremen; Hensel, Bruckman & Lorbacher, 8 cs. from Bremen and 21 cs. Hamburg; J. Beckhardt & Co., 2 cs. from Bremen; S. Gilbert, 15 cs. from Bremen; D. F. Young, 2 cs. from Liverpool and 13 cs. London; B. F. Drakenfeld & Co., 3 cs. from Liverpool; Happel & McAvoy, 52 cs. from Hamburg; Bank of America, 10 cs. from Hamburg; Fuchs & Lang Co., 4 cs. from Hamburg; W. A. Foster, 5 cs. from London; F. C. Gerlach, 10 cs. from Bremen; Winter, Wolff & Co., 136 cs. from Rotterdam; F. L. Kraemer & Co., 44 cs. from Bremen; Tamm & Co., 11 cs. from Rotterdam; Japan Paper Co., 3 cs. from Southampton, 11 cs. Trieste, 6 cs. Havre and 109 cs. Kobe; F. Murray Hill, Inc., 3 cs. from Bremen; W. Bersch, 3 cs. from Bremen; Gallagher & Ascher, 2 cs. from London; Borden & Riley Paper Co., 4 cs. from Antwerp; H. E. Gould, 3 cs. from Shanghai; Schneider Bros., 2 cs. from Havre; Baltic Shipping Co., 2 bls. from Havre; Keller-Dorian Paper Co., 16 cs. from Havre; Lunham & Moore, 6 cs. from Hamburg; E. J. Colvin, 14 bls. from Hamburg; Irving Trust Co., 31 cs. from Kobe; National Freight Forwarding Co., 2 cs. from Hamburg; Phoenix Shipping Co., 2 cs. from Hamburg; Globe Shipping Co., 9 cs. from Hamburg, 8 cs. Southampton, 7 cs. Bremen and 9 cs. Havre; Bush Service Corp., 4 cs. from Havre; International Forwarding Co., 27 cs. from Antwerp and 7 cs. Hamburg.

Dayton Rubber Erects Addition

The Dayton Rubber Manufacturing Company of Dayton, Ohio, makers of Dayton Cog-Belt Drives, Dayton Standardized Fractional Horsepower Drives, Dayton Fan Belts, and Dayton Thorobred Tires, has just recently erected another building to furnish additional warehousing and shipping facilities, as shown in the foreground of the accompanying illustration.

This is the ninth unit to be erected by the Dayton Company since it moved to its present location in 1921 and represents an investment of approximately $30,000. Size of building is 160'x180'—is of brick, concrete and steel construction and was put up in the record time of 24 working days.

Analysis of a Paper Mill Accident

Since the inauguration of a Safety Engineering Service in the Maine State Department of Labor and Industry an **Industrial Safety Bulletin** has been published. In the September issue of the Bulletin, H. G. Gilson, safety director of the Oxford Paper Company, is quoted concerning an accident to an employee by the slipping of a bar which released a machine doctor permitting it to fall on the man's fingers and cause severe injuries. Mr. Gilson reports on the accident as follows:

"In analyzing the causes of this particular accident, we find two direct causes. The iron bar which has been customarily used, was quite worn at the end, and not evenly shaped. The second cause was that the man holding the bar, had not inserted it fully under the doctor, and it therefore did not have a full bite.

"As to our remedy. We have had our engineering department draw for us an angle iron rest which will set back of the doctor shaft; also a seven-foot iron bar with two quarter-inch ring lips, shrunk and welded in place so that when this new bar is inserted under the doctor, the bar rests into this angle plate with the lips to prevent it from slipping."

With Walter J. Brennan, formerly of the St. Croix Paper Company, acting as safety engineer for the Maine State Department of Labor and Industry, it may be expected that pulp and paper mills throughout the State will derive great benefit from the safety engineering service operated under his direction.

The Second International Heating and Ventilating Exposition to be held at the Auditorium Annex, Cleveland, January 25 to 29, 1932, will be a huge living catalogue, showing two years of progressive development since that time, in heating, ventilating and air conditioning. Every purchaser of products and equipment in this fast growing field will have a better understanding of what is transpiring within the industry after visiting this exposition.

DO YOU KNOW!

Or Are You Taking It For Granted

that the felts you are now replacing on your machine every few days are the very best felts for your particular requirement?

Satisfactory water removal is important, 'tis true . . . but not the whole of the story. Are your present felts showing the wearing qualities you have the right to expect? That also is important.

It would pay you to check up by switching over to Orrs for a spell. Mills that try this method of checking up usually learn something about the relative merits of various brands that stands them in good stead ever after.

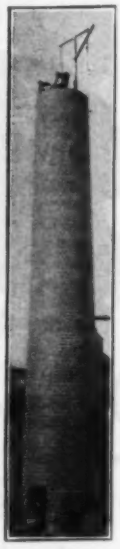
Orrs are also unexcelled for their water-removing qualities.

Consult the nearest Orr representative.

The Orr Felt & Blanket Co.
Piqua, Ohio

ORR FELTS

RADIAL BRICK
CHIMNEYS
Designed and Built
OLD
CHIMNEYS
Inspected and repaired while in operation—
also guaranteed.



Among our customers are some of the best known Railroads, Waterworks; and Coke, Steel, Machinery, Paper, Soap, Chemical and Glass Manufacturers.

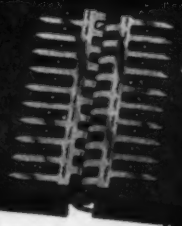
Write for full information

A Repair Job

New Erection

The NORTHWESTERN CHIMNEY CONSTRUCTION CO.
FIDELITY BLDG. Cleveland, O.

ALLIGATOR
STEEL BELT LACING

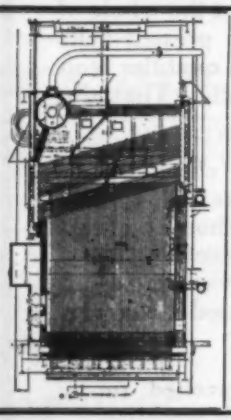


Scientific Joining Alligator Steel Belt Lacing holds the belt in a vise-like compression grip. Prevents ply separation at belt ends. The smooth flexible joint is reliable in service and has great surplus strength. It rocks on oval faces of the sectional hinge pin.

Quickly and Easily Applied with only a Hammer

Combines the efficiency of an endless belt and the convenient take-apart feature. In general use on light, medium and heavy belts of all types. Made also in "monel metal". Eleven sizes. Sold the world over.

FLEXIBLE STEEL LACING COMPANY
4675 Lexington Street Chicago, Illinois
In England at 135 Finsbury Pavement, London, E. C. 2
To avoid imitations look for the Alligator on the yellow labeled box and stamped on the lacing.

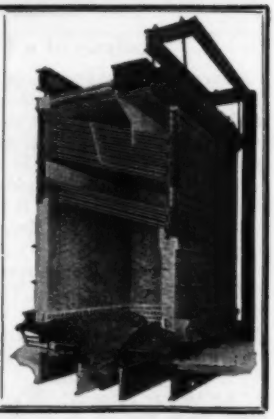


SPRINGFIELD
BOILERS AND WATER WALLS
Sectional—All Steel
All Sizes—All Pressures
SPRINGFIELD BOILER CO.,
SPRINGFIELD, ILLINOIS

SALES OFFICES:
Chicago, New York, Boston, Philadelphia, Richmond, Atlanta

SALES OFFICES:
Pittsburgh, Kansas City, Minneapolis, Cincinnati, Houston, St. Louis

REPEAT ORDERS CONSTITUTE THE LARGEST PART OF OUR BUSINESS.



Morey Paper Mill Supply Co.
38 CHAUNCY St. Vulcan TRADE MARK BOSTON, MASS.

Sole Selling Agents
"LAMBETH" COTTON TRANSMISSION ROPE
and EGYPTIAN COTTON ROPE FOR SHEAHAN CARRIERS
Careful, Intelligent, Quick Service

Foreign Trade Opportunities

The following foreign trade opportunities are issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. Those interested are requested to communicate with the Bureau at its offices in Washington or New York or its branch offices in other cities, in every case mentioning the number of the inquiries referred to.

No. 53550—Bag-making machinery. Sao Paulo, Brazil. Agency desired.

No. 53621—Bags, paper, large mesh, for onions. Biringham, England. Purchase desired.

No. 53546—Bags, paper; wrapping paper, bond writing paper, and newsprint paper. La Paz, Bolivia. Agency wanted.

No. 53598—Bags, paper, bristol board, envelopes, newsprint, strawboard, fiberboard, and corrugated boxes. Manila, P.I. Agency desired.

No. 53548—Cardboard or strawboard, suitable for making ice cream cartons. Vancouver, Canada. Purchase desired.

No. 53626—Cigar pockets, paper. Long Eaton, England. Purchase desired.

No. 53549—Overissued newspapers. Bhavnagar, India. Purchase and agency desired.

No. 53620—Newspapers, overissue, clean. Tientsin, China. Purchase desired.

No. 53606—Oiled papers for wrapping candy. Alajuela, Costa Rica. Purchase desired.

No. 53603—Writing paper, including letter and note paper; drawing paper, boxed papetries, blotting paper, and loose leaf books. Lisbon, Portugal. Agency wanted.

No. 53848—Paper bags and wrapping and toilet paper. Santo Domingo, Dominican Republic. Agency desired.

No. 53847—Cellulose sheeting, transparent. Vienna, Austria. Agency wanted.

No. 53785—Insulating board. Copenhagen, Denmark. Agency desired.

No. 53786—Insulating boards and sheets. Copenhagen, Denmark. Purchase desired.

No. 53784—Newspapers, overissue. Batavia, Java. Purchase desired.

No. 53775—Pulp, chemical and mechanical. Barcelona, Spain. Agency wanted.

No. 53835—Roofing felt. Buenos Aires, Argentina. Agency desired.

No. 53844—Safety paper for manufacturing bank checks. Prague, Czechoslovakia. Purchase desired.

No. 53846—Wallpaper, low priced. San Jose, Costa Rica. Purchase desired.

No. 53927—Cellulose sheeting, transparent, stippled. Zurich, Switzerland. Purchase desired.

No. 53922—Envelope-making machinery. Hyderabad, India. Purchase desired.

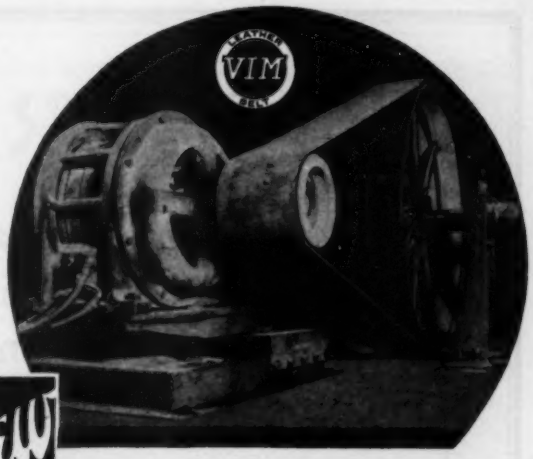
No. 53929—Machines for the manufacture (cutting, gluing, folding and packing) of all sizes of manila paper bags. Vancouver, Canada. Purchase desired.

"Miss Kriete" Leaves the A. P. and P. A. Offices

Mrs. George C. Schwartz, who is well and favorably known in the paper industry, having for many years been prominent at the annual meetings of the American Paper and Pulp Association, while in charge of the registration desk at the annual meeting, severed her connection with the association on October 1.

Mrs. Schwartz, who was Miss Alice L. Kriete before her marriage last January, has served in the administrations of seven presidents of the association and has been secretary to secretaries A. D. Naylor, L. B. Steward, Dr. Hugh P. Baker, O. N. Porter and the present general manager, Jesse H. Neal. In leaving the service of the association she carries with her the esteem and good wishes of all who know her for the quiet, agreeable and obliging lady she is.

Announcement is made that the National Exposition of Mechanical Handling which was scheduled for November 30 to December 5, has been postponed until the Fall of 1933.



New

TRANSMISSION EFFICIENCY with VIM Efficiency Drives

VIM Efficiency Drives are built to meet conditions that play havoc with ordinary belting.

A VIM installation will transmit maximum power with less initial tension than other types of short-center drives. It meets the demand for high or low speeds; for continuous or intermittent driving. It is not affected by moisture, dust, or oil. A VIM Efficiency Drive will give you long, trouble-free service because VIM Leather makes the toughest, most pliable belting that money can buy.

What's more, VIM Efficiency Drives do not require special pulleys. A VIM Efficiency Drive costs, in some cases as much as 30% less than competitive types.

It is equipped with a special device that provides uniform tension and reduces slippage to a minimum. This compensates for stretch, which is present in all belts, and reduces "take-up," with its attendant maintenance costs and production losses.

. . . .

Write for a free copy of "VIM Short-Center Drives"... a brief, intelligent discussion of points that every belt user should know.

E. F. HOUGHTON & CO.

PHILADELPHIA .·. CHICAGO .·. DETROIT

And All Over the World

VIM EFFICIENCY DRIVES

THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

Made by

DRAPER BROTHERS COMPANY

CANTON, MASS.

Woolen Manufacturers Since 1856

REPRESENTATIVES

L. H. BREYFOGLE, Kalamazoo, Mich. INTERNATIONAL TRADING CO., Philadelphia, Pa.

PACIFIC SALES COMPANY, Security Bldg., Portland, Ore.

FARREL-BIRMINGHAM
COMPANY INC.

40 State St., Ansonia, Conn.

PAPER MACHINERY

CALENDERS: Board
CALENDERS: Paper
CALIPERS: Roll
GRINDING MACHINES: Roll
PRESSES: Hydraulic
Calender Roll Recovering
Pulp Dehydrating

ROLLS: Chilled Iron, Dry Sand, Gray Iron, Alloy Iron, Steel
For: Calender Stacks
Board Calenders
Super-Calenders
Glassine Calenders
Friction Rolls
Breaker Rolls
Smoothing Rolls
Creping Rolls
Plater Rolls
Cutting Machines
Paraffining and Waxing Machines
Saturating Machines
Silicating Machines
Miscellaneous Special Purposes

TRANSMISSION MACHINERY
Gears, Cut: Spur, Single and Double Helical (Farrel-Sykes Continuous Tooth Type)
Speed Reduction Units (Farrel-Sykes)

See PAPER AND PULP MILL CATALOG or LOCKWOOD'S DIRECTORY — 1931

Farrel Two-Wheel Grinding Machines with swing rest and cam-type crowning device always produce an absolutely accurate and correct shape; noted for extreme accuracy, especially on long paper calender rolls. List of installations on request, with prices and specifications.

NEW RECORDS FOR PRODUCTION AND PRECISION ARE MADE ON FARREL-BIRMINGHAM MACHINES

Maximum Structural Strength with . . Minimum Weight

Send for Bulletin 30-2

FOR AIR-WATER-OIL AND GAS

In sizes 6" to 24" in diameter and lengths to 40 feet.

NAYLOR PIPE COMPANY
CHICAGO, ILL.

Sales Offices: New York - Philadelphia - Tulsa - Houston - Ft. Worth

ROEPER TRAVELING CRANES

HAND POWER *and* ELECTRIC

Floor or Cage Controlled

We specialize in cranes up to 10 tons capacity and can offer quick shipments

ROEPER CRANE & HOIST WORKS, Inc.
1724 North 10th St., Reading, Pa.

Frank Butler Dilts

Frank Butler Dilts, president of the Dilts Machine Works, Fulton, N. Y., passed away at his home in Fulton, September 17.

Mr. Dilts was born in Fulton, February 14, 1874 and has since resided there. Just before graduating from the engineering college of Cornell University, the sudden death of his father, Frank Dilts, then owner of the Dilts Machine Works, called him from his studies to assume active management of the business. He continued in that capacity up to the time of his death, becoming its president when the business was incorporated in the year 1913.

During his life, Mr. Dilts had various paper mill interests, having been one of the incorporators of the Volney Paper Company of Fulton, in which organization he served as a director and vice-president. He also held interests and official positions in the Eureka Paper Company, the Arrowhead Mills, Inc. and the Draycott Mills, Inc.

Mr. Dilts had an exceptionally able mind of recognized integrity. He was energetic and enthusiastic in everything he did. He was prominent in civic affairs and during the war served as a captain in the ordinance department, being stationed at the United States arsenal in Watervliet.

He is survived by his wife, Bessie Smith Dilts and a sister, Mrs. B. W. Bennett of Fulton.

Armco Will Again Be on the Air

The American Rolling Mill Company's Armco Concert Band whose delightful concerts have been broadcast during previous seasons, will again go on the air for a radio season which will extend over a period of 26 weeks.

The first concert will be held Monday night, October 19, between 9:00 and 9:30 Eastern Standard Time. On that night, the radio audience will hear Geo. M. Verity, chairman of the board of the American Rolling Mill Company, speak on the subject "There can be no end to progress." In addition to the musical program, the Armco Iron Master will give a brief talk on some interesting phase of the iron and steel industry on every program.

During previous broadcasting seasons, so many requests were received from Latin America and other foreign countries that it was decided to broadcast these programs over short wave station W8XAL, in addition to station WLW in Cincinnati.

Westinghouse Re-Organizes Industrial Sales Department

To effectively serve the electrical requirements of all industries, the industrial sales department of Westinghouse Electric and Manufacturing Company has been reorganized under the direction of O. F. Stroman, industrial sales manager.

Bernard Lester and C. B. Stainback have been appointed assistant sales managers in charge of 14 divisional managers, who will have charge of units grouped according to the main classifications of industry. Mr. Lester, who has been with the company since 1905, will have charge of the following divisions: Mining and metal working electrification, general mill electrification, machinery electrification, appliance electrification and general industrial resale. Mr Stainback, who has been with the company for the past 19 years, will have charge of nine divisions as follows: Medium A. C. motor, medium D. C. motor, large motor, small motor, welding, industrial heating apparatus, safety switch, control and cost. J. M. McKibbin, Jr., has been appointed manager of the promotion and advertising section and will function under the joint direction of the assistant sales managers.

Edward L. Ryerson, Jr., president of Joseph T. Ryerson & Son, Inc., Chicago, has been chosen as one of a committee of 60 leaders in business and economic activities to assist Walter S. Gifford, as director general of the nation's relief program. Mr. Ryerson has also been made chairman of the Governor's Commission on Unemployment and Relief for the state of Illinois.

MECHANICAL INTEGRITY!

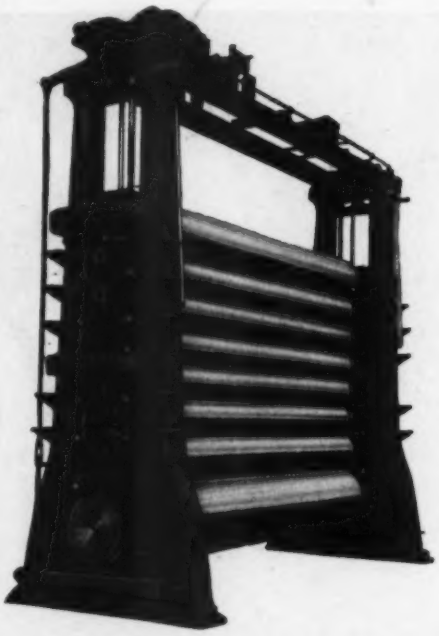
"Mechanical Integrity" is a different thing from Business Integrity, for it refers to machines rather than men—

In a Frederick Stock Pump, for instance, it means flawless performance without the necessity of having the manufacturer make repairs or adjustments under the terms of his guarantee. For Fredericks deliver uninterrupted service at less cost for power as soon as they are installed. And so well is this understood that the list of Frederick users is both long and important. One large company uses over one hundred Frederick pumps.

Thus is illustrated the quality Frederick Pumps have: They are guaranteed by *us*, but they have mechanical integrity in *themselves*. WRITE FOR LATEST PAPER MILL FOLDER AND CONSULT US CONCERNING ANY PUMP PROBLEM YOU HAVE IN YOUR PLANT—no charge.

FREDERICK PUMPS

The Frederick Iron & Steel Co., Frederick, Maryland



LOBDELL

CHILLED IRON ROLLS

and

MACHINE CALENDER STACKS

Specified on your new machine or for the new rolls for your old stacks insures rolls of maximum hardness and perfect finish.

Calender stacks are equipped with either Electric Motor, Hydraulic, or Ratchet Lift, all operated from the floor.

Improved Oiling Systems either completely circulating with oil filters and sight feed—Ring oiling closed end boxes—or a combination of both.

LOBDELL CAR WHEEL COMPANY
Established 1836
WILMINGTON, DELAWARE

FITCHBURG DUCK MILLS

ESTABLISHED 1844

414 Duck Mill Road, FITCHBURG, MASS.

Manufacturers of

TRIUNE and MULTIPLE PLY

CANVAS DRYER FELTS

← { OUR NEW 300-INCH LOOM WHICH IS MAKING A DRYER FELT 288 INCHES IN WIDTH }

Fine Faced "English Woven" Felts for Fine Papers in Three, Four, Five and Six Ply 60 inches to 288 Inches in Width.

ABSOLUTELY NO FELT MARKS IN PAPER

TRIUNE Three Ply Felts for extra long service and large production